FLASHES AND PLUGS

MORE NICKEL BARGAINS. Business concerns in New York City are answering telephones by saying more than "Hello." One Walt Disney office answers with *"Mickey Mouse."* . . . Perhaps the longest name response can be obtained by dialing WHitehall 4-1212, where the operator says: *"Merrill Lynch, Pierce, Fenner & Beane, good morning."* Asked if she ever said anything else, the operator replied: *"Gosh, no. Isn't that enough?"* . . . Then there is the animal cemetery office which answered, *"Lay them to rest among the best"*; the ice company where the auditor got *"Our ice never melts,"* and the matrimonial bureau which said: *"We know the loveliest people."*

Even private residences have characteristic telephone responses. Best response so far is the one made at the home of a Park Avenue dweller: *"The big shot is out; this is the maid talkin'."* . . .

• • •

DIRECTORY DOODLERS! What is a doodler? Webster doesn't say, but in common *"slanguage"* he's a person who, with the help of a pencil, covers the telephone book with names, numbers, circles, squares, stars, twists and twirls while talking over the telephone.

Pages of telephone books are used for other things, too. One Toledo, Ohio, subscriber used his book as a memory helper. On the cover was written: *"Remember Louis-Conn bet with Elmer."* Another had jotted *"Get nylons from Bunny Monday."*

• • •

NEW REPAIR ANGLE. According to the chief operator at Bolling Field, at least one army officer did not know how telephone people function, reports *The Transmitter*. Something was wrong with his telephone and he disconnected it and brought it to the central office and asked the C.O. to have it repaired for him. She suggested that if he would take it back to where he got it she would send a properly qualified repairman to do the job.

• • •

HUNGER PANGS! If safety engineers have their way, hasty breakfasts of *"Coffee and"* will be relegated to the past and great grandpappy's morning feast of *"ham and"* will come up for a revival. This all results from a recent ordnance depot survey of 1,000 consecutive accidents which disclosed that the greatest number of the accidents occurred between 11 a.m. and noon and that little or no breakfast had been eaten by the banged-up workers. Contributing cause of the accidents was increased hunger during the morning hours which lead to nervousness, lessened judgment, inattention to work and fatigue.

• • •

FAME. When Mr. Aaron died, the obituary in the small town paper stated that he was a distinguished person—*in whatever city he lived he headed the list of names in the telephone directory.*

• • •

TALL POLE TALE! J. B. King, of Wheatland, Wyo., vividly recalls when he started in the telephone business 35 years ago by climbing poles which several years later proved to be too tall. Back in those days, he said, it was believed the telephone poles should be from 60 to 65 ft. tall. When the 45-ft. poles came into use, King was so accustomed to climbing the taller ones that one day he forgot to stop going after reaching the top. He climbed right on off the top of the pole and landed in the branches of an apple tree 25 feet below. . . . *Can you beat That One?*

TELEPHONY

The Journal of the Telephone Industry

AUGUST 3, 1946

Contents

PLANNING FOR GROWTH OF THE TELEPHONE SYSTEM 13
By D. W. Hansen

IN THE NATION'S CAPITAL 18
By Francis X. Welch

COMING CONVENTIONS 19

THE OPERATOR'S CORNER 23
By Mayme Workman

THE PLANT MAN'S NOTEBOOK 26
By Ray Blain

COURTS AND COMMISSIONS 32

H. D. FARGO, Jr., *President & Advertising Manager*
R. C. RENO, *Vice-President & Editor*
H. D. FARGO, *Vice-President & Treasurer*
A. J. STULTS, *Secretary & Western Manager*
JOHN G. REYNOLDS, *Associate Editor*
RAY BLAIN, *Technical Editor*
FRANCIS X. WELCH, *Washington Editor*
CLAIRE LE BRINT, *News Editor*
MAYME WORKMAN, *Traffic Editor*

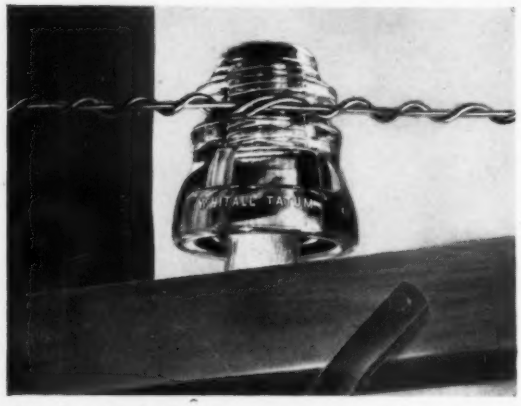
Published by

TELEPHONY PUBLISHING CORP.

Vol. 131, No. 5. Published every week on Saturday by TELEPHONY PUBLISHING CORPORATION, 608 South Dearborn St., Chicago (5), Ill. 15 cents per copy (except special issues). Subscription $3.00 per year U. S. and Countries in U. S. Spanish Postal Zone; $4 Canada; $5 Other Countries. Entered as second class matter September 4, 1908, at the Post Office at Chicago, Ill.

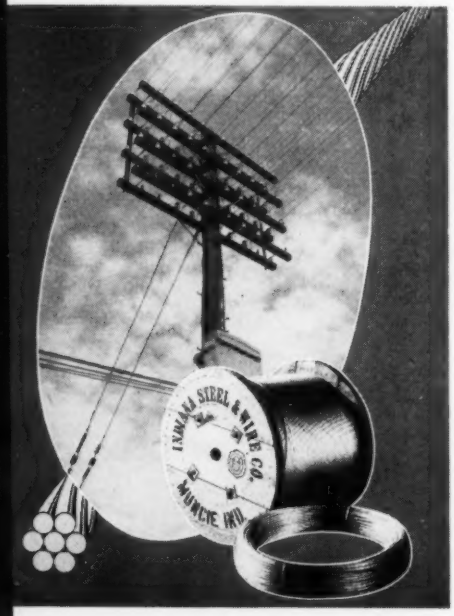
Telephone Wabash 2435
608 S. Dearborn St., CHICAGO (5), Ill.
U. S. A.

Not A Kink In A Carload. Kellogg Koiled Kords always stay out of the way and thus help reduce telephone breakage caused by dangling cords. The outer rubber cover is permanently molded in spiral shape, thus assuring natural, uniform retractability. An exclusive KELLOGG product.



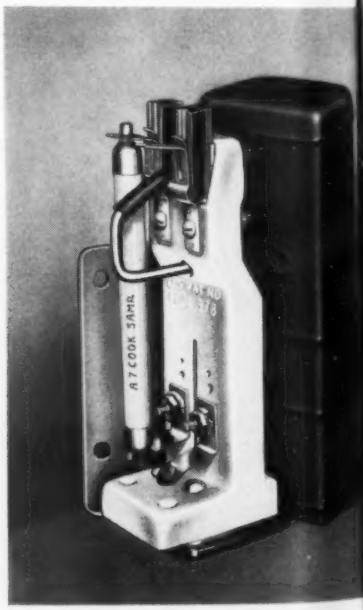
Meet Every Service Need. That's why so many companies use Armstrong's Whitall Tatum Insulators. Made by ARMSTRONG CORK COMPANY, they feature crystal clarity of glass, accurate gaging, and unusual resistance to temperature changes. A good bet for reducing maintenance.

Sealed Against Trouble. Leading manufacturers of communication equipment rely on KESTER Rosin-Core Solder to eliminate high-resistance joints and intermittent open-and-closed circuits. It permanently seals joints and protects them against service troubles. The special patented plastic rosin flux used in this KESTER SOLDER CO. product does not cause corrosion or injure insulating materials.



The Time-Tested Steel Strand. A ductile, adherent zinc coating, applied by the famous Crapo Galvanizing Process, provides lasting protection against corrosion in Indiana Crapo Steel Strand. Made by INDIANA STEEL & WIRE CO., its rugged strength minimizes maintenance expenses.

Drier Than the Driest Desert! The safe, easy way to dry splices in lead covered cables is to sprinkle Drierite Desiccant among the conductors. It makes the splice about the driest part of the cable. This W. A. HAMMOND DRIERITE CO. product will not harm conductors or insulation.



Built to "Take It!" The Cook Type "O" Sub tion Protector, with grounded non-corrosive dur hood fitting tightly to sides and botto ideal for indoor or outdoor use. Made by C ELECTRIC CO., its body is low-absorbent celain, designed to prevent surface leakage.

Planning for Growth of the TELEPHONE SYSTEM

By D. W. HANSEN,
Division Commercial Manager, Chicago Area,
Illinois Bell Telephone Co.

(Reprinted from The Journal of The Western Society of Engineers.)

THE problems relative to planning in the public utility field may be divided into two major categories; first, those which are of a short term nature and, secondly, those that are long term in character and associated primarily with the expansion of the business. Although my discussion will deal primarily with planning for growth with respect to the furnishing of telephone service, some aspects of the problem will be recognized as common to all public utility undertakings.

In our present consideration, we may dismiss the short term problems of public utilities with the brief observation that they usually involve the factors which confront most private business undertakings, i.e., the problems relating to financing the operations of the business over the immediate future fiscal period, the determination of the size of the employe force which will be required to meet the manpower requirements in each department or function, the amount and kind of supplies, materials or stock, which will have to be purchased during the period under consideration, any seasonal or other unusual fluctuations in volume to be anticipated, and the integration of all of these items to produce the desired operating results. These are, of course, important items of planning in any business and any lack of adequate consideration of any one of them could possibly result in inefficient operating, unsatisfactory service to customers or even failure of the business in some instances.

At the present time, the entire telephone industry has a most important short term problem of meeting the backed-up demand for telephone service resulting from wartime restrictions on the manufacturing of all kinds of telephone equipment and facilities. This is the most urgent of all current problems and the industry has adopted many temporary expedients, reused equipment which normally would have been junked, and has resorted to certain uneconomical engineering practices in order to give the maximum amount of service with the available plant and thus keep the unfilled applications for service at a minimum.

It is essential that the operations of the telephone company over the long term period make the most effective use of the large investment in buildings, central office equipment and outside plant. Expansion of the over-all facilities must be planned so that each engineering project will make its maximum contribution in caring for the growing needs for service.

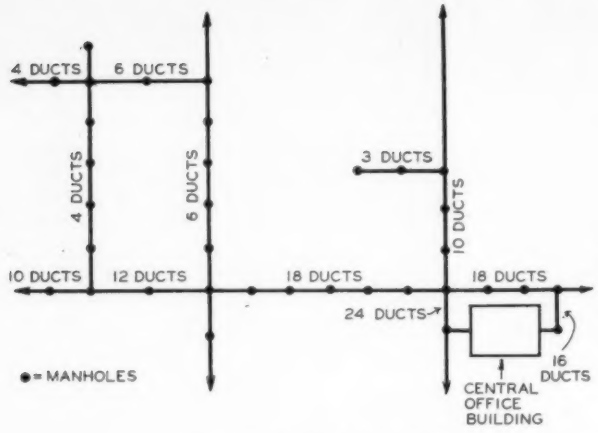
In order to care for this demand as promptly as possible, some stop-gap methods will have to be used temporarily even though they may be uneconomical from the long term viewpoint. When the primary objective of caring for all held applications has been reached, the work of relieving the overloaded plant condition, replacement of those temporary expedients which were adopted and the addition of the equipment necessary to restore the prewar speed of local and toll service will bring about a condition again approaching normal for the industry.

But since the usual short term problems in the telephone business and other public utility undertakings are substantially similar to those of private enterprise, with such modifications as are necessary to meet the varying aspects of particular businesses, my discussion will be limited to the long term aspects of public utility planning. It is in this phase of the work that utility companies have problems to meet which are quite different from those usually encountered in private business undertakings.

For example, in the manufacturing field, the investment in buildings, land, machinery, tools and the materials and supplies required for the particular manufacturing processes usually represents the total operating financial interest. The return to investors becomes primarily a function of the volume and resultant unit profits on the sales of the manufactured products. The place where these products will finally satisfy the need of a consumer is not too important.

In the field of wholesale and retail distribution, the investment in warehouses, store buildings, land, equipment, furniture and fixtures, and the stock inventory again represents most of the financial interest and the earnings are dependent upon the rapidity and efficiency of the marketing process and the profit margin which will be realized when the goods are passed along their various paths to reach an ultimate consumer.

Again the location of the consumer is not too important, provided the goods finally reach an existing market and a retail business even may be moved if necessary without too large a penalty. Even in the public transportation field the traveler comes to the railroad station, the bus depot or the airport to utilize the form of transportation he has a particular need for at that time. But in the public utility field the service must be brought to the very doorstep of the ultimate consumer and even



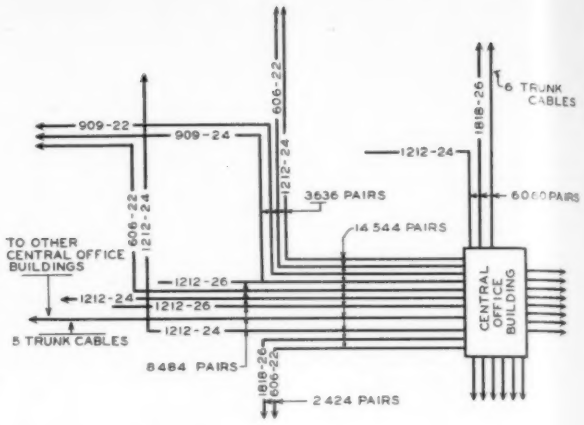


Fig 1. (Left) Typical underground conduit scheme. Fig. 2. (Right) Typical underground feeder cable system.

distributed within his home or place of business in such a manner as to best suit his individual requirements.

Another important difference in comparison with other private enterprises is that the manufacturer or distributor usually has some choice in determining how much of a given market he will attempt to satisfy, i.e., he may limit his volume of business to the economical capacity of his plant and equipment if he so chooses or he may expand his business by enlarging his plant and adding to his equipment if he desires to compete for a larger share of the total sales. His competitors, in any case, usually stand ready to supply the remainder of the market. In the public utility field, on the other hand, the utility must undertake to furnish its service to all who require it, at the rates set forth in its lawful tariffs. Within an urban area, a utility has little choice once it engages in its public undertaking but to expand its plant and facilities as necessary to care for the demand for service to the best of its ability.

These particular distribution aspects, which I know are not new to any of you, make necessary a very large investment in plant facilities in comparison with the total revenue derived from customers' use of the service. As of the end of 1944, the total plant investment of the Illinois Bell Telephone Co. was $378,839,000. Since there were at that time 1,826,000 telephones connected for service, the investment was about $208 per telephone.

The return in most private businesses is based upon the unit profits on the products or merchandise sold, and plant investment may be a relatively minor factor in the operating costs. On the other hand, the large investment in plant in the utility field, which is made in anticipation of a relatively long life for the equipment, causes this element to be of prime importance, to the extent that the measure of financial operating success becomes largely the per cent return which the utility can earn on its investment. It is this element which makes long term planning in the utility field of particular importance.

In the telephone business the objective is to furnish customers with the best telephone service which can be provided at rates which are as low as practicable, consistent with the payment of adequate wages and salaries to employes, and earnings which will make investors willing to put additional capital into the business as required to enable the company to furnish adequate service.

In order to accomplish this objective, it is essential that the operations of the business over the long term period be efficient from the standpoint of making the most effective possible use of the large investment in buildings, central office equipment and outside plant. This cannot be realized unless the expansion of the over-all facilities is so planned that each engineering project will make its maximum contribution in caring for the growing needs for service at the lowest possible annual costs consistent with rendering the service which will be satisfactory to customers.

This is the contribution which is expected of the studies having to do with planning for the probable future growth in the number of telephones and the extent to which they will be used. Since some 1,167,000 telephones, or 64 per cent of the company's total, at the end of 1944 were within the city of Chicago, it is evident that the problem of long term planning in Chicago has been and will continue to be an important factor in the efficient operation of the company's business.

In the long term planning for the operation of the telephone business, the first major item to be considered is the layout of central office buildings, the boundaries of the central office area to be served from each building and the selection of the interoffice trunk paths by means of which a calling party in one office area may be switched to reach a called telephone in a different office area. It will be understood, of course, that in a city as large as Chicago, there are limitations in the economical lengths of subscriber loops, as well as transmission and signaling limitations and the physical impracticability of serving all telephones from one large centrally located building, which eliminates the possibility of such an arrangement. At the other extreme, the cost of buildings and the increased interoffice trunking costs impose also a limit on the decentralization of central office switching equipment and the use of too large a number of buildings.

The fundamental plan toward which effort is directed, therefore, is the one which will keep the total investment in plant at a minimum, but with due regard to those advancements in the telephone art which are impending, or in the process of being made available, for which some modifications may be advisable in the interest of long term economy. At any given time the fundamental plan controls any additions to the central office equipment or outside plant and the basic plan is thus carried out in a series of steps which are timed to the changes and additions made necessary by growth.

It will be appreciated, however, that the basic fundamental plan may have to be modified as newer types of central office equipment, cables or station equipment make possible more economical and efficient arrangements, or as the pattern of telephone growth varies from that which had been anticipated.

It is necessary in this part of the work to consider the probable number of telephones which will be connected and the volume of traffic to be handled some 15 to 20 years in the future.

The second major item of engineering planning arises in connection with additions to central office buildings and central office equipment. These projects are, of course, coordinated through the fundamental plan. The addition to a central office building and the engineering of additional switching equipment are undertaken well in advance of the expected time of their actual service need in order that they will be ready when the previously installed capacity of the office is reached. Normally, central office equipment is engineered on the basis of providing sufficient capacity for growth for a two-year period.

The last major item is that of the outside plant. Although the outside plant also includes the conduit, poles, service drop wires and open wire, it is composed largely of cable, both underground and aerial, which may be ordered in standard sizes and gauges of conductors to meet the various requirements. The normal periods of maximum fill for which cable is engineered vary from about six years for main underground cable to about 20 years for the smaller distributing cable. Ordinarily, cable relief is provided well in advance of any actual shortage of the facilities necessary to furnish telephone service when it is requested. The installation of additional conduit either in existing paths or extensions of existing conduit is based upon the fundamental plan and the expected requirements for growth. Frequently the actual work may be done at any opportune time when streets are to be paved or resurfaced. The conduit placed at any given time is engineered normally for a period of maximum fill of 20 years.

Once central office equipment and outside plant are provided, the full efficiency in their use will be realized only if the growth in telephones and lines and the volume of traffic in the case of interoffice trunk cables are consistent with the estimates of station and line growth and traffic. Manufactured articles, food products, clothing, etc., may be transported anywhere a market is known to exist.

In the case of telephone service, however, the necessary central office equipment, buildings and outside plant must be available to provide service exactly where and when it is desired. One pair of wires is required for each one party main station or private branch exchange line or each two two-party main stations. This pair of wires and the inter-connected train of switching equipment and trunks must make possible the connection of any telephone instrument with every other telephone in Chicago and throughout the entire United States as well as with foreign countries and ships at sea. It is not sufficient that the telephones merely may be inter-connected but in addition the over-all plant must be so designed that the quality of transmission will be uniformly good no matter whether the inter-connected telephones are less than a few blocks apart or hundreds of miles from each other.

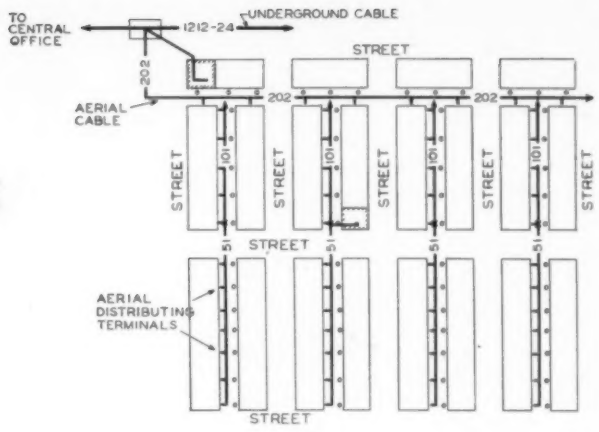


Fig. 3. Aerial feeder cable and distribution system in blocks.

Experiments are now under way with mobile radio-telephone service which will make possible the interconnection of any of the present telephones with telephones installed in automobiles, buses and trucks, or harbor and river vessels, as easily as connections are now made with those installed in the usual home or office location.

The engineering of the various items which comprise the telephone plant and the development of any modification of the fundamental plan which serves as a guide to all of this engineering are based upon forecasts of telephone growth, the distribution of telephones by the various classes of service offered under the schedule of rates, and the forecasts of telephone message use. I have not gone into the forecasting aspect of the problem earlier because it seemed best to develop a common understanding as to the underlying objectives and uses to be made of market forecasts.

Telephones are, of course, used by people in their homes in carrying on their many social and domestic activities. In business and industry telephone service is used wherever it will expedite the handling of buying and selling transactions and the innumerable informal administrative and other contacts required in the daily operation of any business. These uses then are basically the markets for telephone service.

Obviously, a study of Chicago's population is the first step in the analysis of this market. How has it grown? Why has it grown? How is it divided into families? What are the characteristics of these families? How many telephones do they use? What are the economic activities of this large population? How much telephone service is required for these activities? The answers to these questions indicate merely the extent to which telephone service is used today but this is essential if the future prospects for telephone growth are to be appraised with a sound understanding of the fundamental factors involved. Population studies are an interesting field of investigation and there is always a considerable amount of information appearing in newspapers, trade journals and other publications on this subject.

Although much of these data are interesting and useful, the census information compiled by the Bureau of the Census at 10-year intervals continues to be the primary source for most population studies. From these detailed census tabulations and certain vital statistics it is possible to develop information as to the sources of Chicago's growth, i.e., the amount by which the increase in population may be attributable first, to an excess of births over deaths, or secondly, to immigration from foreign countries, or thirdly, to migrations within the United States. Such basic data have been developed by decades and compared with the growths experienced in other cities which appear to be competing with Chicago for that part of the country's population which tends to migrate for economic reasons.

The growth of large cities in this, the east north-central, section of the country is particularly dependent upon the degree to which the city attracts younger people from rural communities because of the employment opportunities in business and industry. This

element in the population is, therefore, affected by the growth of the industries which comprise the Chicago economic pattern. Consequently, no study of the Chicago population problem would be complete without consideration of the prospects in those basic industries which are responsible for the major portion of industrial employment. There is, of course, an abundance of information of this kind available in the Census of Manufactures and also from the studies of the Chicago Plan Commission, the work of the Chicago Association of Commerce, and others.

The family unit is of primary importance in estimating the market for residence telephones. Consequently, the population must be converted into families and these in turn studied as to their economic status and their actual or potential need for telephone service. Again, census data supplemented by data obtained through field surveys provides much of the information which is needed for these analyses. The analyses of the character of the population is as important as the determination of the total number of persons, or families, since some areas have a residence telephone development of only 25 or 30 telephones per 100 families while in other areas almost every family has at least one telephone.

The requirements for business telephone service are dependent principally upon, first, the number of firms —professional, retail and service—required to meet the needs of the city's population and using telephones in these enterprises, and secondly, the use which will be made of telephones in the manufacturing industries, wholesale and retail trade, hotels, railroads and other concerns which serve more than the local population of Chicago.

After analyzing the present telephone development and arriving at certain conclusions as to how it has been related to the population growth and economic activity of the city, the next step in the plan of market studies is that of forecasting the probable future needs for telephone service. First of all, it is necessary to make a population forecast based upon the outlook for Chicago's industrial activities to continue to attract those seeking employment as well as the growth to be realized from natural increases and perhaps immigration. Fortunately, the Chicago Plan Commission, the Chicago Regional Planning Association, the Chicago Association of Commerce, the other utility companies, and many other organizations are also interested in the outlook for Chicago's future. Consequently, we have the opportunity

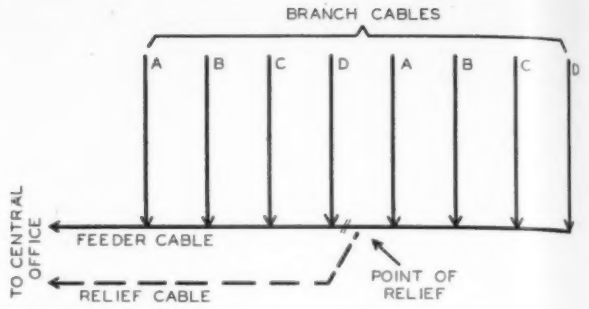


Fig. 4. Cable relief by reinforcement.

of consulting with others and coordinating certain aspects of the study work.

Forecasts of families, business firms and industrial expansion and the resultant labor force and employment are derived from these studies. Normally, an effort is being made always to improve the telephone service of customers by regrading and upgrading from four-party to two-party or individual line service and by encouraging the use of extension lines and other auxiliary services and these efforts must be considered. The number of telephones expected to be required in future years and the distribution by classes of service are then estimated on the basis of this market analysis.

The problem of planning for growth, however, finally becomes one of deciding how much outside plant and switching equipment shall be placed in each respective area of the city. Forecasts for the entire city are not of much use to the engineer who is planning for central office relief in an area perhaps five or six square miles or for cable relief in an area of less than one square mile. In the Loop area, the telephone density is approximately 180,000 telephones per square mile. In a typical built-up outlying residential area, the density is some 8,000 per square mile. These figures are cited merely to indicate the differences which may exist even after sections of the city are completely developed from the standpoint of land utilization.

Based always upon the outlook for Chicago as a whole, which serves as a control basis, the growth in population, families, firms and industry and finally telephones and lines is estimated for each central office area. For cable projects, the telephone and line estimates are made for the area served by each main cable route and if necessary, by smaller working sections to facilitate the planning of the distributing cable from which the drop wires finally will be extended as they are needed when service is ordered. This forecasting for small areas is obviously more hazardous than forecasting for the city as a whole, particularly where the area under consideration is only partially developed or may undergo considerable change in its character.

However, the nature of the problem of providing telephone plant is such that any single standard uniform system of distributing cable plant would involve severe cost penalties or be inadequate entirely in many instances. Since the engineer is confronted with the problem of designing plant to meet a specific probable demand for service within some reasonable limitations, he will require an estimate of the market to guide him.

Consideration also is given to those factors which appear to be affecting, or will likely affect in the future, the particular area under study. These include such items as employment possibilities, zoning restrictions, the trends in housing, the public improvements which are contemplated, the transportation, shopping, schools, playgrounds and other facilities and neighborhood characteristics attractive to families. Any transition occurring in the neighborhood is observed during field surveys and through records maintained for the area. Much useful information is available from the Chicago Land Use Survey, the data for which were collected and tabulated through the Work Projects Administration under the direction of the Chicago Plan Commission; also, much valuable information is available through data compiled by the Bureau of the Census on the basis of census tracts. Further detailed information from the 1940 Census is being made available under the joint sponsorship of the Chicago Association of Commerce and the University of Chicago and this will facilitate further analyses of the economic status and background of families by small areas and neighborhoods.

The forecast for the small cable area must be consistent with that for the larger central office area of which it is a part and the forecast for a central office area, in turn, consistent with the estimates for the city as a whole. In this way, the errors inherent in forecasts for small areas are minimized by guarding against any general tendency

either to underestimate or overestimate potentials for growth.

Use of the telephone and line estimates assists the engineer engaged in fundamental planning to select locations for central office buildings which will be as close to the respective wire centers as practicable. At the present time there are 27 central office buildings in Chicago. Some of these will be discontinued in the future and new buildings will be added as the fundamental plan for the future is carried out. The telephone and line forecasts and improvements in the design of station equipment, central office equipment and cables, determine what changes may be necessary in the future in the manner in which certain growing areas will be served, i.e., whether the area should continue to be served from the same building, whether it may have to be transferred to an office with greater installed equipment capacity, or whether a new building is needed.

The forecasts of telephones by areas, particularly when these estimates are provided on a basis which indicates the relative amounts of the various classes of residence and business services to be expected, furnish a picture as to the volume of traffic, or message use, which should be provided for and thus are used in the development of the interoffice trunking plan. The estimates are used also in planning the orderly introduction of dial equipment so that replacement of the manual central office equipment will occur as nearly as practicable at the time when the conversion penalties will be at a minimum. Within each central office, the estimates of the number of telephones by the various classes of residence and business service provide the basis for estimating the probable volumes of traffic which will have to be handled, either by operators or the dial equipment, during the office busy hour.

The forecasts by cable route areas and working sections enable the engineer dealing with the layout of cable plant to select the most economical routes from the central office and to design the distribution cables to care for the probable number of telephones to be served within the area during the engineering interval he is considering. Since for transmission and signaling reasons he must have the proper gauge of wire facilities available at any location where service is to be installed and the particular cable route may serve areas near the central office as well as areas three or four miles from the central office, the forecasts can be of considerable assistance in the engineering of cable plant to take advantage of the possible variations in gauges for reasons of economy in so far as practicable.

FORMULA

Thinking, not growth, makes manhood. Accustom yourself, therefore, to thinking. Set yourself to understand whatever you see or read. To join thinking with reading is one of the first maxims, and one of the easiest operations.—*Isaac Taylor.*

It may be of interest to illustrate with a few schematic diagrams the usual plan of providing conduit, and feeder distributing cable to furnish telephone service within a given area. *Fig. 1* shows schematically part of the system of conduit paths radiating from a central office. It will be noted that there is a large number of ducts provided in the conduit paths for a short distance from the central office but that the number is reduced as the distance from the office increases. Where the conduit is also used for interoffice trunk cables additional ducts are necessary for this purpose. One duct in each path is provided for use of the city of Chicago.

As mentioned earlier the conduit frequently may be added at any opportune time provided the engineer has some idea as to the probable future requirements. The long term forecasts provide this information. In certain areas there is some flexibility in duct space due to improvements in the art which have resulted in the development of larger sized cables. During the early '20's the maximum sized cable contained 1,818 conductors whereas present subscriber loop cables may contain as many as 4,242 conductors in one sheath. Cables which will be added in some instances in the future will, therefore, have a much greater capacity for serving customers than the cables contemplated at the time the conduit was placed, and replacement of the older cables with new larger cables may afford the necessary relief in a conduit run where all except one duct are in use, without supplementing or replacing the conduit.

Fig. 2 shows schematically the plan of extending feeder cable plant to serve a cable route area. Here each line indicates a particular cable and the number designation associated with each line, as 1212-24 means 1,212 pairs of 24-gauge conductors. For the sake of simplicity the cables of only one of the various paths that radiate from the central office building are shown. The number of cables that extend in the various directions from a central office building, of course, depends upon the particular requirements of the area concerned and for this reason varies appreciably between different central office buildings.

It may be of interest to know that in the case of one central office building in Chicago more than 100 cables extend from the building. It will be noted that as the cables of the path extend from the office building the total number of pairs progressively becomes smaller. It is the responsibility of the engineer to design an economical arrangement which will be sufficiently flexible to accommodate the demand where or when it occurs.

Fig. 3 shows a typical distribution cable system. Systems of this kind branch from underground feeder cable systems of the kind shown in *Fig. 2* and serve different portions of the cable area. The cable, connecting these systems to the underground system branches out into the smaller aerial cables which form a network serving every block and terminate in the terminal boxes from which drop wires extend into the particular premises where telephones are installed.

It will be appreciated that there are many more total pairs of conductors in all of the small distribution cables than there are pairs in the branch cable with which they are connected, and that the sum of the pairs in the branch cables is greater than the number in the main feeder cable. This permits a cable pair in the main cable to have two or more duplicate appearances in the branch and distribution cables. This duplication of pairs is another method of providing as much flexibility as possible. If the growth in one section of the area is heavier than expected and less in other sections, the extra pairs can be used where they are needed.

When growth in a particular area makes relief necessary, the engineer must study the various aspects of the problem in order to determine the most appropriate method to be used and the scope of the relief measures which should be adopted. In this connection, he has a choice of a variety of cable relief methods and the possible use of any one, or a combination of more than one, in a specific case depends upon the conditions to be met in caring for the particular situation. Thus, in any particular instance it is possible to use any one or more of the following relief measures:

(1) A rearrangement may be made of the cable branches within one or more cables.
(2) Cross-connecting terminals may be used.
(3) Component parts of the cable plant may be replaced.

(Please turn to page 39)

IN THE NATION'S CAPITAL

BY
FRANCIS X. WELCH
WASHINGTON
EDITOR

Senator Tobey asks investigation of FCC. . . . Welch summarizes November political trends and makes predictions. . . . Congressional Reorganization Law discussed.

SENATOR TOBEY is mad at the Federal Communications Commission (FCC). Senator Tobey is a Republican from New Hampshire and he has set the reasons he is mad at the commission down in very orderly fashion in a resolution to investigate the FCC. This resolution, coming as it did on July 24 when the Senate was getting cleaned up and ready to go home, was hardly expected to pass without some assistance from the Democrats. Such will not be forthcoming.

But as an example of what the FCC is in for, by way of criticism, during an election year, Tobey's resolution is a fair specimen. Briefly, he told the Senate Committee on Interstate Commerce to investigate the following charges against the commission:

(1) That it is using its control over radio to censor broadcasting and interferes with freedom of speech.

(2) That the FCC has fumbled the ball badly in its recent allocation of spectrum frequencies particularly with respect to shifting the location of frequency modulated (FM) radio.

(3) That the FCC hasn't done a competent job of radio regulation generally.

Just why the New Hampshire senator should be so worked up about the FCC is not too clear. But the commission is used to being hauled on the carpet every so often. The chances are that some of the unhappy FM people got to Senator Tobey with their troubles. It looks as if Tobey threw this resolution into the senatorial hopper just before Congress quits, so as to get an early start on a measure to probe the FCC which will be pressed next year under the next Congress.

• • •

Deep in the heart of Texas, the FCC had trouble with a roomful of political candidates and their friends—this time, all Democrats. Dr. Rainey, ex-president of Texas University and candidate for governor (running on a "vindication" platform) demanded that the FCC investigate his claim that the Texas Quality Network was trying to gag him. The FCC scheduled a hot-weather session under a member of its legal staff, good-natured Col. James D. Cunningham, who evidently believes that letting angry men "blow their stack" is good for their souls and cooling on their tempers.

At any rate, Cunningham did little to restrain the cross firing of the candidates' statements and of their attorneys. When all this Texas family firing had died down and the smoke cleared away, the only impression a disinterested observer got is that it would take more than the FCC to gag a Texas candidate when he gets going good. Listen to this excerpt from Dr. Rainey's statement, charging an agreement among Texas radio stations:

"It was designed to keep me from presenting my program to the public and to defeat me by a barrage of editorials, shaded, biased news stories concerning me in the newspapers owning and controlling these radio stations."

Whatever the truth or untruth of these charges the FCC knows by experience that the parties themselves will lose interest after the Texas primaries and run off elections. It has always happened that way.

In fact, the FCC might save time and trouble if it issued a general order to the effect that "All political candidates wishing to bring or renew the customary charges or countercharges against the FCC or each other, alleging fraud, suppression, censorship and other abuses, crimes or irregularities will be given prompt attention and hearing every week day during office hours by the special FCC Examiner in Charge of Pre-Election Squawks." Of course, these is no such FCC official at present. But it might be a good idea at that.

• • •

An old reader of this department dropped a line the other day to ask, "Isn't this a good time to give us one of your periodical summaries of the political trends—now that most of the primaries are out of the way?"

Considering the confused way these primaries have been going, a cautious observer would be inclined to say "No, this is *not* a good time to do any such thing; it's a good time to duck in a hole, be quiet and see what more is going to happen." However, that is not what your correspondent is paid to do. So here we go again—right out on the limb, wide-eyed, unafraid, and dancing around where angels fear to tread and so forth.

It is a fact that the political winds, this year, have been shifting around like Maine squalls in March. Every time the veteran observer thinks he sees two or three pieces of evidence lying close enough to call it a "trend," along comes a blast from the opposite direction. Generalization of any kind is absolutely out, so far. Consider for example the following:

1. The CIO Political Action Committee: Is it working or not? Has it been a blessing or a hindrance? The results, to date, are quite mixed. The PAC succeeded in knocking off some prize targets, Senators Wheeler of Montana, Shipstead of Minnesota and ex-Senator Nye of North Dakota—all chiefly on the ground they were "isolationists." But the PAC failed to stop Senators Butler of Nebraska or Bilbo of Mississippi or Governor Warren of California or Talmadge of Georgia and unexpectedly lost out on several sitting congressmen, such as Patrick of Alabama and Rankin of Georgia.

2. Is *outside* influence good or bad in the primaries this year? Well, it was bad for Senator Wheeler but good for his opponent. Senator Bilbo admitted that his own campaign was in a bad way, until a couple of blow-hard news-

paper and radio commentators in New York City and Washington began to bombast him. This gave Bilbo a chance to cry that he was being "persecuted" by some Yankee "peckerwoods."

Gene Talmadge tried the same stunt successfully in Georgia. On the other hand, "Jimmie" Roosevelt giving out free advice to the country at large, can claim that he helped defeat Shipstead in Minnesota. He also helped the communist sympathizer, Representative DeLacy to get under the wire in a close primary in Washington. On the net balance, "outside influence" has done the recipient more harm than good, but the results are still mixed.

3. Is the "turn over" going to be heaviest among the "strong men" or the "rumble seat members" in Congress? For the benefit of those who have not been initiated into the Washington political jargon—a "strong man" in Congress is one who takes a definite line on most major issues, makes a lot of speeches and generally puts himself on record as much and as often as possible. His political direction may be right, left, or center, but in any event you know where he stands—sometimes tiresomely so. A less reverent name for the "strong man" is "wind bag."

In contrast, we have the "rumble seat member," who has figured out that the best way to keep his seat in Congress is to keep his mouth shut. He gets on record only when necessary, to make as many friends and no enemies if possible. It works out pretty good for some members. Not long ago a certain congressman died and he had been in Congress 30 years without making a single speech on the floor. A lot of people working around the capitol didn't even know he was in Congress.

Well, to get back to our original question, some election years are hard on the "strong men" and easy on the "rumble seat" members. Other election years seem to reverse this condition. But this year, it looks as if the casualties are going to be heavy both among the "strong men" and the "rumble seat" members. Certainly, the turn-over is going to be quite substantial, regardless of party affiliations or political direction.

4. What will be responsible for this heavy turn over? Here again we are unable to find a clear-cut, foolproof answer. A good many members in Congress who have been around a long time have found themselves afflicted with "veteranitis." The gold-button boys have got their numbers. Some of the other old-timers in Congress are having trouble even without gold-button complications. It is not a widely recognized phenomenon, but it is fairly ascertainable that, when a member sits in Congress for a long time, 20 years or more, bit by bit local opposition builds up against him.

Some congressmen describe it as simply the local desire for a change. Others say it is the case of a member getting too big for his seat. But whatever the cause, there have already been four casualties among members who have sat in the halls of Congress for more than a score of years. Senator Wheeler's case is a fair example. A lot of people who didn't like Wheeler are claiming credit for beating him. But the local desire of Montana's voters for a change might have been just strong enough this year to make the difference in the senator's fairly close but unsuccessful race for renomination.

Another thing which is commonly overlooked in the heat of a season of close primary races and upsets—is the fact that a tough primary fight very often exhausts the winner, so that he is a "pushover" on election day for uncontested opposition from the other party. A lot of congressmen will admit that trouble on primary day very often means twice as much trouble on election day—in states where two parties are actually doing business. And so, while Senator Wheeler's defeat was something in the nature of a mild upset, it would be a mistake to assume that his successful rival will have any walkaway at the polls next November.

Applying this reasoning to other congressional contests, it will be seen that the heaviest part of the 1946 turn-over is perhaps yet to come. One House member, who makes a hobby of election statistics and analysis, told this correspondent that the turn-over in the November election is usually about twice as great as in the party primaries.

5. What does all this mean at times in final results next November? Well, considering the rate of the current primary turn-over, it looks as if 30 to 35 members of the present Congress will not win renomination, if the aforementioned rule of thumb is sound. That would make from 60 to 70 seat changes next November. Under the present distribution of party seats in the House of Representatives, this would indicate Republican control of the next House by a majority of 30 to 40 seats.

Of course, a lot can happen between now and November to change this picture. But that is this writer's prediction for mid-summer and he is willing to get stuck with it for better or worse. The Senate turn-over will not be so large, and it would seem as if the Republicans would miss by several seats, gaining control of the Upper Chamber. But it looks right now as if it is going to be pretty close even in the Senate.

• • •

Speaking of Senator Wheeler's defeat, recalls the fact that he will no longer be at the head of the Senate Interstate Commerce Committee — a post he has held for a number of years. This is the committee which handles all federal regulatory legislature affect-

(Please turn to page 22)

COMING CONVENTIONS

South Dakota Telephone Association, Hotel Carpenter, Sioux Falls, September 11 and 12.

Michigan Independent Telephone Association, Hotel Olds, Lansing, September 18 and 19.

United States Independent Telephone Association, Stevens Hotel, Chicago, October 14, 15 and 16.

Independent Pioneer Telephone Association banquet and entertainment (USITA Convention), October 15, Stevens Hotel, Chicago.

Virginia Independent Telephone Association, John Marshall Hotel, Richmond, November 7 and 8.

North Carolina Independent Telephone Association, Pine Needles Hotel, Southern Pines, November 11 and 12.

South Carolina Independent Telephone Association (no hotel selected), November 14 and 15.

Alabama Independent Telephone Association, Jefferson-Davis Hotel, Montgomery, November 18 and 19.

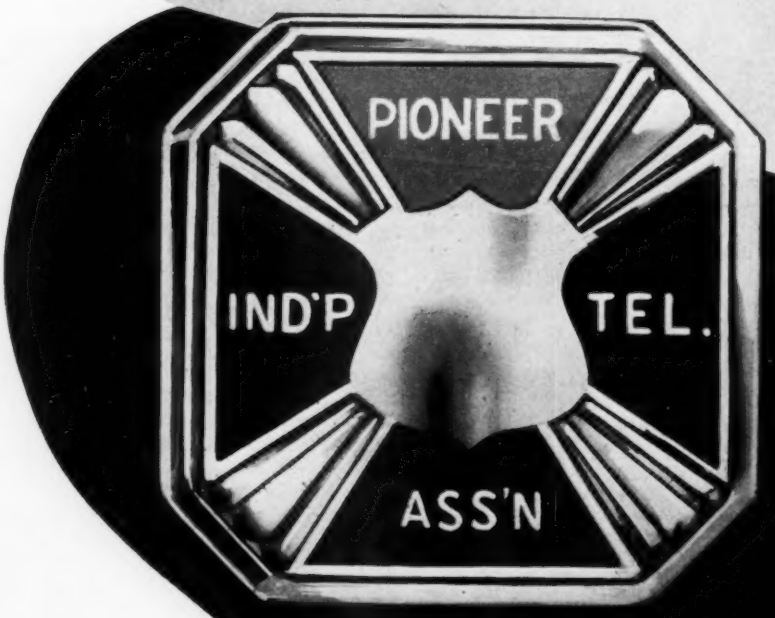
Missouri Telephone Association, Hotel Governor, Jefferson City, November 18 and 19.

Georgia Telephone Association, Henry Grady Hotel, Atlanta, November 21 and 22.

Florida Telephone Association, Marion Hotel, Ocala, November 25 and 26.

Nebraska Telephone Association, Hotel Lincoln, Lincoln, April 8 and 9, 1947.

Perpetuating INDEPENDEN*Tr*



THE CERTIFICATE AN
BADGE OF INDEPENDENT
PIONEERS

Traditions and Ideals . . .

That has been the prime purpose and major activity of the Independent Pioneer Telephone Association since its inception. Its by-laws, adopted 25 years ago, stated that the association was organized "to preserve the history, traditions and ideals of Independent telephony; to promote and perpetuate fellowship and friendliness; to encourage the development of the art and industry. . ."

Since 1921, the Pioneer association has been the rallying place for many men and women who have gone through the apprenticeship stages of Independent telephony and who have dedicated their life's work to the industry.

Independent telephony's traditions have been established by *men* and *women* within its ranks, working either as individuals or in the industry's organizations. They can be maintained *only* by the men and women who have guided the industry through its long and eventful history.

The Independent Pioneer Telephone Association is the only industry association organized, maintained and sponsored for and by individuals. It is the natural rendezvous for those Independents who value their friendship with other telephone folks; who have a sense of personal pride in their industry and who desire to perpetuate its fine records based on independence, American free enterprise and cooperation which they worked so effectively to establish.

All Independents interested in the welfare of the industry should belong to the Pioneer association. To be eligible for membership they must have 15 or more years of service in the Independent industry. The dues are $2.00 per year—a small cost for the privilege of helping to preserve Independent telephony's traditions and ideals and in cementing and promoting personal friendships and cooperation within the industry.

Membership applications can be secured from J. K. Johnston, secretary-treasurer, Independent Pioneer Telephone Association, Indianapolis 4, Ind. Use the coupon below.

THE INDEPENDENT PIONEER TELEPHONE ASSOCIATION
632 Lemcke Building • Indianapolis 4, Indiana

I have been employed in the Independent Telephone Industry for_____ years. Please send me a Membership Application Blank.

Name_____

Address_____

City_____ State_____

TISEMENT CONTRIBUTED BY TELEPHONY

ing utilities—including the Communications Act or any amendments thereto. With Senator Wheeler gone, Senator Barkley (D., Ky.) is the next Democrat in line to be chairman of that committee. Of course, he will not want it, because he would have to give up the more important job of majority leader. So, if the Democrats regain control of the Senate next January, it looks as if Senator Johnson (D. Colo.) will succeed Wheeler as committee chairman.

Johnson has been described as a middle-of-the-road man. He had not taken much active interest in telephone or other communication affairs. But he will have to do so if he takes over Wheeler's committee job. If, by chance, the Republicans should win control of the Senate as well as the House Senator White (R., Me.) would succeed Wheeler, because two Republican senators ahead of him on the committee will not be in their seats next January.

• • •

And this brings us to a consideration of the Congressional Reorganization Law which Congress passed in the dying days of the recent session. This was such an extensive face lifting job on congressional institutions and traditions (some of which have stood for over a century) that there was considerable surprise when Congress managed to vote the new law. The authors of the measure were Senator LaFollette (R., Wis.) and Representative Monroney (D., Okla.)

The bill cuts the number of Senate committees from 32 to 15 and House committees from 48 to 19. The Committeee on Foreign and Interstate Commerce remains a fixture in both houses however, and will continue to have jurisdiction over regulatory affairs, including telephone legislation. One interesting feature of the reorganization law is that it gives Congress power to balance the budget by requiring that money income and outgo be considered in relation with each other, instead of separately, as heretofore. Up to now, one committee in Congress would do all the appropriating while another would do all the raising of tax. The result was usually a race which left the nation more and more in debt, and always gave the taxpayers the sticky end of the stick.

The new committees in the next Congress will be better equipped with staff experts, and the congressmen themselves will be better equipped with folding money. The senators voted to increase their salary from $10,000 to $15,000, while the House members will have to struggle along on $12,500 plus $2,500 for expenses per year. The new law also regulates lobbying by requiring "legislative agents" for special interest, to register. However, the definition of what constitutes a "lobbyist" is pretty sketchy. In any event, it does not cover the most active lobbyists of all government department heads and officials.

Mark Twain's Telephone

Samuel Clemens, the "Mark Twain" of literature, once refused Alexander Graham Bell, the inventor of the telephone, his New Year's wishes. It was at the time when the telephone had recently been invented, and the famous humorist was greatly tried in attempting to make practical use of the new contrivance.

Professor Bell was keen to have such a famous man as Mark Twain find the new invention helpful, but the latter felt so exasperated with his attempts to use the telephone that he vowed to throw the thing out of the house.

A few days later Mark Twain became ill, and, coincidentally, in a distant city occurred the death of a near relative. Mark Twain was unable to attend the obsequies, and Professor Bell knew of this situation. There came an offer to Mark Twain from the professor to connect his Hartford home with the church in which the memorial services were to be held. The humorist was belligerent, but, in the absence of an alternative, accepted Professor Bell's proposal on condition that there would be no obligation. The telephone was attached to Mark Twain's bed, and he listened with surprise and rapture to the services.

Mark Twain sent to Professor Bell a request for a statement of the cost, expecting to pay a large fee for the elaborate experiment. In return came a statement of account bearing the single item: "Your New Year's Greeting."

Mark Twain prepared the most elaborate of all his famous New Year's greetings, and sent it to Professor Bell by special courier. Ever after, Samuel Clemens and Alexander Graham Bell were very close friends.—**Sunshine Magazine.**

Edison Monument Outlives War

The late Thomas A. Edison started a sizzling argument among residents in Hachiman, Japan, when Japan went to war with the United States.

Super-patriots didn't like the idea of paying homage to an American. They insisted the town's monument to Edison must go.

But the town elders argued back: "Edison was a friend of ours. He did a great service for the world and Japan. We are not at war with Edison."

The monument remained.

It stands today as a proud reminder of the contribution to development of light bulbs by Hachiman.

When Edison was working on his bulb idea, there was no tungsten. He needed something for a filament. The idea of using bamboo was suggested and a messenger from the United States came to Japan to seek the proper kind. He found it at Hachiman.

In 1934, 13 scientific and educational organizations sponsored a nationwide movement to erect a monument to Edison. Pennies contributed by school children financed the memorial.

THE OPERATOR'S CORNER

BY
MAYME WORKMAN
TRAFFIC
EDITOR

TELEPHONE companies assume responsibility for errors of their employes in handling long distance calls. If an employe, in handling a messenger call, sends a messenger to a wrong address and it is necessary to send a second messenger, the customer is not charged for the messenger service rendered on the second call.

If additional messenger service is necessary because of a mistake made by an employe of the telephone company at the terminating toll center or by the messenger office, the terminating toll center operator will not advise the OTC operator of the charge for additional messenger service and no charge will be made against the calling station for this service.

When it is necessary to arrange for additional messenger service beyond that normally required and for which no charge should be made, at the finish of conversation, the case should be reported to the supervisor or chief operator.

When an operator reports that it has been necessary to send a messenger more than once, because a mistake has been made by an employe of the telephone company or by the messenger office, the following procedure is followed by the supervisor or chief operator in the originating toll center office:

She will write "mg chg (amt to be charged)" in green across the face of the ticket and, if the messenger charge to be cancelled has been entered on the ticket, she will draw a line through it and show only the correct messenger charge. She will enter an explanation of the case on the back of the ticket in order that the correct amount may be billed to the calling station. She also will enter her personal number on the ticket.

If a mistake is made by the messenger office, the supervisor or chief operator will ask the messenger company to cancel its charge. In this case and also if the mistake was made by an employe of the telephone company, the supervisor or chief operator will make sure that the total charge of the messenger company is shown on the face of the IN ticket and she will enter an explanation of the case on the back and sign her personal number. She will also reach the originating toll center TX and inform her of the correct amount to be billed to the calling station.

In arranging for messenger service, all necessary details should be given clearly and distinctly in order to avoid error. If there is any doubt that all of the information has not been understood, the doubtful items should be verified.

The foregoing is in answer to query No. 1, "If a messenger is sent to the wrong street number and another messenger is sent to the right street address, is there a charge for the second messenger and, if so, who must pay it?"

Questions from Illinois Operators

(1) If a messenger is sent to the wrong street number and another messenger is sent to the right address, is there a charge for the second messenger and, if so, who must pay it?

(2) On a messenger call, should the letter "P" or "M" be entered in the class space?

(3) How would you handle a drunken party calling continually on a party line or farm line?

(4) Can you look up names and addresses in another town over the toll board for a subscriber who wishes to send telegrams?

(5) What is a "part charge" ticket? How should it be written?

Answers to these traffic questions are presented on page 38.

Your Customer

A CUSTOMER—is the most important person to enter your place of business. . . .

A CUSTOMER—is not dependent on you; you are dependent on him. He pays your salary. . . .

A CUSTOMER—is not an interruption to your work. He is the purpose of it. You are not doing him a favor by serving him—he is doing you a favor by giving you the opportunity to do so. . . .

A CUSTOMER—is not an outsider to your business — he is a vital part of it. . . .

A CUSTOMER—is not cold statistics—he is a human being with hopes and emotions like your own. . . .

A CUSTOMER — is a person who brings you his wants. It is your job and duty to handle them with promptness, courtesy and consideration. — Southern Coal and Coke Co.'s *Coal Notes*.

V V

Texas Newspaper Advocates Higher Telephone Rates

Wondering editorially "why it is that the telephone companies are just about the only people in the country that have kept on giving the public good service at the old time low rates" in the face of increasing operating costs, Sterling P. Hart, editor of the Commerce (Tex.) *Weekly Farm Journal* advocates rate increases that would allow telephone companies to show a reasonable profit while making needed improvements.

Commending the industry, the editorial states: "There is probably no public service, government or private, that gives so much for so little as does the telephone. Kept in good condition at all times by efficient mechanics, with alert operators, your telephone stands by 24 hours a day at your command. Socially, it is a wonder, in business it is a time saver and a money maker. In sickness it is sometimes a life saver."

Tribute is paid to Roi Cornish, district manager of the Gulf States Telephone Co., who with the first available material has started work on lines expanding the system in the rural communities around Commerce.

In recognition of the good service rendered by the Gulf States company to the city of Gatesville, Judge S. A. Lindsey, company president, was invited to attend a public dinner acknowledging the city's appreciation.

Yesterday -- Toda

AUTOMATIC ELECTR

MONOPHONES

for appearance–

perma

Type 50 Wall-Mounting Monophone

Type 43 Compact Monophone

You can't miss when you choose Monophones. Hundr of thousands of these fine instruments "proved in" thro years of tough wartime service, and are giving complete isfaction *right now*, to telephone users and telephone m

Telephone users *like* Monophones for their beauti flowing lines—the smooth, quiet operation of the A matic Electrial dial—the comfortable, perfectly balan handset—the pleasant signal of the two-tone ringer. All t together with their advanced transmission characteris earns these instruments a hearty welcome into subscrib homes and offices.

Tel is qua receiv circuit of de struct the y

Tel phone years lead.

AUTOMATIC E

Originators and Developers of the S Sender-Translator Operation . . . Step-b Switc
Makers of Telephone, Signaling and Communicat . . . El

Distribut Possessi

AUTOMATIC ELECTRIC SALES CORPO 033 W

Export Distributors: INTERNATION OMATI

. . . tomorrow!

Type 40 Self-Contained
Desk Monophone

permance—
easy maintenance

Telephone men know that, back of these features, there is quality engineering. They like the damped-diaphragm receiver, all-positions transmitter, and exclusive Monophone circuit—the Automatic Electric dial, with its unique record of dependable, trouble-free operation—the rugged construction which keeps Monophones in service right through the years, with only a rare maintenance call.

Telephone men who *know* Monophones—*want* Monophones. They're ordering NOW—for tomorrow and the years ahead. You can't miss when you follow their lead.

ELECTRIC

Step-by-Step "Director" for Register-Switching Automatic Dial Systems
. . . Electrical Engineers, Designers and Consultants

Possessions

033 W. Van Buren St., Chicago 7, U. S. A.
MATIC ELECTRIC CORPORATION

THE PLANT MAN'S NOTE BOOK

BY
RAY BLAIN
TECHNICAL
EDITOR

THE Pacific Telephone & Telegraph Co. recently installed number plates with braille characters to public telephones at Dibble General Hospital and two public telephones in the Palo Alto business office.

The braille characters, representing the telephone numbers, are imprinted on the transparent cellulose acetate disc which covers the regular station number card. It is stated that this service, which was developed through the cooperative efforts of the local telephone force and instructors for the blind at the hospital, has proved helpful to blind patients, who, after simple instructions, have no difficulty in finding the number of the telephone. The patients are taught to dial by practice on a special unit which enables them to memorize the location of the letters and numbers on an ordinary telephone dial.

* * *

It has been said that although a man may fail many times, he cannot be classed as a failure until he starts to blame someone else.

* * *

A survey of automobiles in Latin America reveals they have 1,000,000 cars, mostly of United States manufacture, that have been in use from 10 to 15 years.

* * *

There appears to be a marked tendency toward the doorless type telephone booth for use in some special locations. Certain locations seem to demand the door type of booth, due perhaps to the necessity for more privacy. This seems to indicate that perhaps both types will be used extensively in the future.

* * *

Loud speaker systems are proving most useful this season at bathing resorts along the Atlantic Seaboard. These speakers are located at regular intervals along the beach and thousands of bathers may be addressed from one microphone. It seems, however, that their greatest service is in locating parents of lost children.

When driving an automobile, it is always well to remember that while haste is temporary, death is permanent.

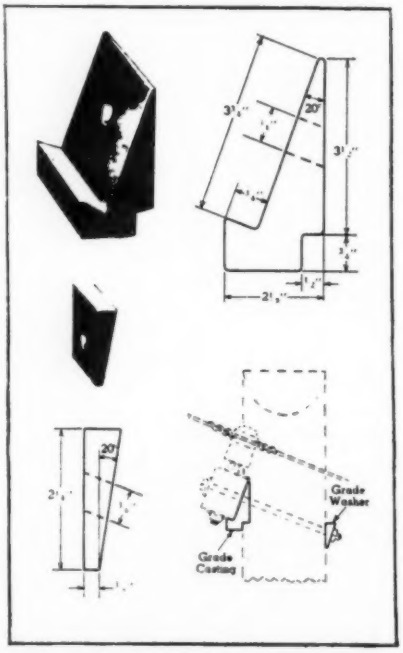
* * *

The electro-jector is a device which sifts through half-dollars, quarters, dimes and nickels and culls out the counterfeit coins and slugs. It is used chiefly by telephone companies, traction companies and banks.

* * *

In the June 15 issue of the Plant Man's Quiz, the question was asked as to how wires could be held in the groove of an insulator when poles are set perpendicular on a steep grade. We explained that the general practice is to cut the gain in the pole deeper at the top so that the groove in the insulator will be parallel with the line wire.

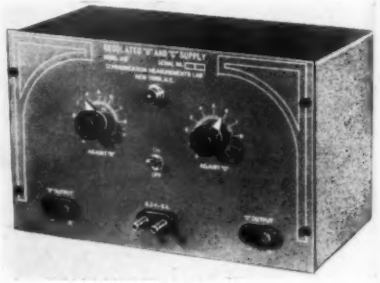
A reader now furnishes us information of a new device known as a grade casting and washer which has been developed for this purpose and which has been used with complete success. The device is shown in detail in the accompanying sketch.



UPPER LEFT: Twenty-degree grade casting. UPPER RIGHT: Sectional view of grade casting. LEFT CENTER: Twenty-degree grade washer. LOWER LEFT: Sectional view of grade washer. LOWER RIGHT: Grade casting and grade washer installed.

* * *

A new dual power supply as shown in the accompanying photograph is now available and should prove of interest to the telephone industry.



The "B" supply furnishes a continuously variable DC voltage from 180 to 300 volts, at 70 ma., with a maximum ripple of less than 25 MV. The negative side of the supply is isolated from the chassis, so that the +B may be grounded if it is desired to use the supply as a grid bias for tubes which draw heavy current.

A continuous variable DC voltage from 0 to 75 volts with less than 7 MV ripple is furnished by the "C" supply.

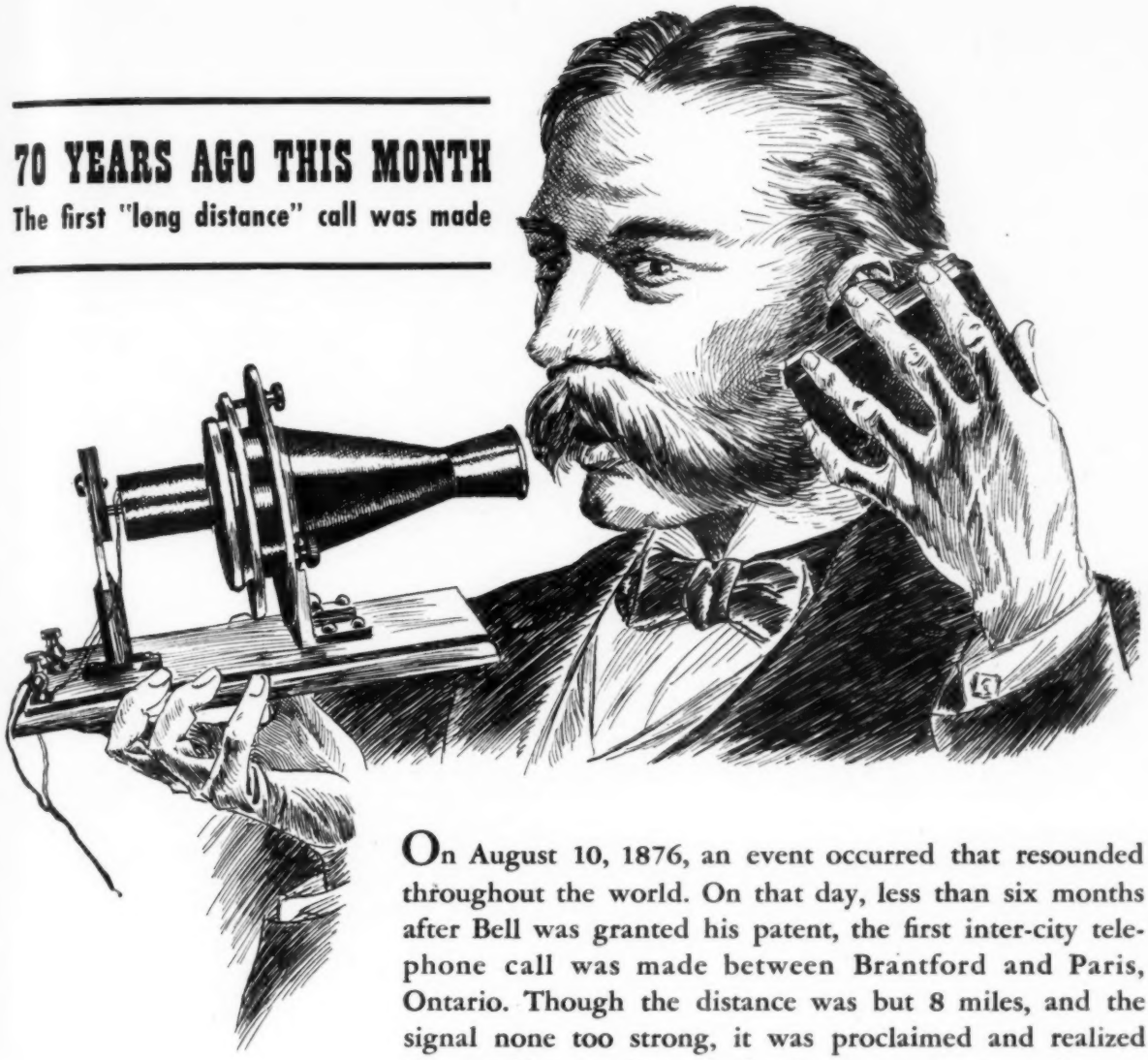
Panel controls are provided to adjust the output voltages throughout the ranges indicated.

* * *

There is a definite trend at the present time for business concerns to consolidate their telephone service on fewer and larger PBX switchboards. Instead of having several small switchboards at various locations, the subscriber's stations are all cabled into one centrally located PBX. This arrangement makes possible a considerable saving even though extra mileage charges must be paid. Operating costs are reduced drastically under this plan and the efficiency of the service is increased.

70 YEARS AGO THIS MONTH

The first "long distance" call was made



On August 10, 1876, an event occurred that resounded throughout the world. On that day, less than six months after Bell was granted his patent, the first inter-city telephone call was made between Brantford and Paris, Ontario. Though the distance was but 8 miles, and the signal none too strong, it was proclaimed and realized the world over that telephonic progress was on its way . . . and moving fast.

"On its way and moving fast" has signified telephonic progress through each succeeding year. To start from scratch and accomplish so much within a single life-time is an achievement of which all telephone workers may well be proud. It is forceful evidence of the soundness of their tradition of faithfulness and dependability.

Exide
BATTERIES

In Exide Batteries, used for many purposes by telephone and other communication companies, you will find the same dependability for which telephone service is famous throughout the world. Since 1895, Exides have been proving themselves worthy of that trust.

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32 • Exide Batteries of Canada, Limited, Toronto

In line with this policy, the U. S. Treasury Department now is conducting extensive studies and is planning a consolidation of its telephone service in various large cities throughout the United States. It is often common practice for government offices to operate several switchboards in one building. The contemplated consolidation will eliminate trunking between the various small switchboards and provide greater efficiency in a single group of trunks to the city exchange.

The only objection to the consolidation plan to date is that subscribers on small switchboards frequently miss the personal service after they are connected to the larger system. This personalized service is not, however, a necessity and its cost is seldom, if ever, justified.

* * *

Someone has said: "Don't think you have converted a man because you have silenced him."

* * *

Reports from the field on drop wire of new design indicate it is far superior to any drop wire yet developed and if properly installed and maintained should give years of trouble-free service. This is encouraging news since, for many years, drop wire was the weakest link, from a maintenance standpoint, in our entire exchange plant.

PLANT MAN'S QUIZ

Q. Can you give us some information on the feet-per-ohm used on 19, 22 and 24-gauge cable for trouble locating?

A. The readings must be corrected for temperature if trouble locations are to be accurate. The following information should serve your purpose:

Temperature F.	*24 Ga.*	*22 Ga.*	*19 Ga.*
0°	44.2	70.9	142.6
10°	43.4	69.5	139.9
20°	42.5	68.2	137.2
30°	41.7	66.8	134.5
40°	40.9	65.5	131.8
50°	40.0	64.2	129.1
60°	39.2	62.8	126.4
70°	38.4	61.5	123.7
80°	37.5	60.1	120.9
90°	36.6	58.8	118.2

* * *

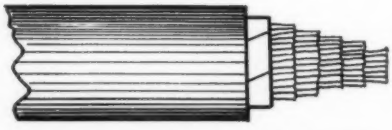
Q. We have a problem of supplying battery to a PBX switchboard which is located a considerable distance from our main exchange. Can you furnish any information which will assist us in making a decision as to whether a battery loop should be provided from the main battery of a separate battery maintained at the PBX location?

A. The common practice at the present time with most telephone operating companies is to maintain a small storage battery at the PBX location and float it with a small rectifier connected to the AC lighting circuit in the building. If cable pairs are available, the battery may be kept charged from the main exchange or the power for the PBX furnished over a battery loop. Probably three or more cable pairs will be required for this purpose depending on the size of the PBX and the load on the battery.

Battery eliminators have been successfully used to supply current to PBX switchboards when commercial power is reliable. The difficulty with this arrangement, however, is that even a momentary failure of the commercial power causes failure of the switchboard. When the current drain on the PBX is small, a dry cell battery to carry over power failures of short duration may be used. A relay cuts the dry cell battery into circuit automatically when the power fails and then cuts it out again when power is resumed.

* * *

Q. Please explain how the ends of all pairs in a lead covered, paper insulated cable can be cleared for testing.



A. The accompanying sketch explains one method used to accomplish this purpose.

* * *

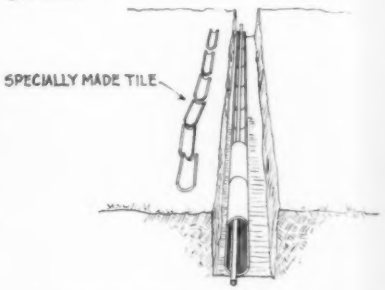
Q. Is double steel tape armored cable considered suitable for installation through a swamp for a distance of about 500 ft.? The cable can be anchored on dry ground on each side of the swamp.

A. Steel tape protective covering adds very little to the tensile strength of lead covered cable. This type of cable is not self-supporting. In deep swamps, or in gulleys or streams, where the earth coverings may be washed away, light wire armored cable should be used.

Submarine cable of either the single or double wire armored type should be used when crossing rivers, lakes, or streams where substantial volumes of water are encountered.

* * *

Q. Will you please give us your opinion as to whether split clay tile can be used to advantage in protecting lead covered cable when placed underground?



A. This method of cable construction has been extensively and successfully used in some sections of the country for a number of years. Specially constructed tile is installed as indicated in the accompanying sketch.

* * *

Q. Please give us transmission data on cable commonly used for exchange distribution. This information is desired for use in determining signalling and transmission limits.

A. It is believed that the following information on one type of paper insulated, lead covered cable may prove useful. These figures apply to non-loaded cable.

Type Pair	D.C. Resistance (Ohms per loop mile)	Capacitance (MF per mile)	Attenuation per loop miles at 1,000 cycles (db pr mile)
19 ga.	86	0.084	1.26
22 ga.	171	0.082	1.79
24 ga.	274	0.072	2.14
26 ga.	440	0.069	2.67

* * *

Q. Is it considered safe to make use of a bicycle pump to flash test a cable splice?

A. When nitrogen gas or dry air is not available, a bicycle pump may be successfully used to flash test cable up to about 200 pairs. Experiments have been made which indicate a hand pump used in this manner will not introduce enough air into the cable to reduce the insulation resistance due to its moisture content. This is especially true when the splice has been treated with desiccant.

With Telepage you can quickly locate anyone in office or plant

"Telepage" makes it possible for a busy operator to locate personnel in any part of the office or plant immediately. A flip of a key and an individual can be paged to the nearest phone. This proves a genuine convenience—a time saver—it keeps a busy board open and gives added service.

In those cases where the switchboard operator is also the receptionist, "Telepage" is a quick way of announcing salesmen on business calls—it avoids delay.

Why not write Webster Electric Company, Racine, Wisconsin, for full information?

Model 10212 paging control unit with facilities to connect through an amplifier to 12 speakers. Twenty-four station model also available.

Licensed under U. S. Patents of Western Electric Company, Incorporated, and American Telephone and Telegraph Company.

WEBSTER RACINE **ELECTRIC** WISCONSIN

Established 1909

Export Dept.: 13 E. 40th Street, New York (16), N. Y. Cable Address: "ARLAB" New York City

"Where Quality is a Responsibility and Fair Dealing an Obligation"

Bell Company Officials in Charge of Connecting Company Relations

New England Telephone & Telegraph Co.:

E. J. St. Clair, Connecting Company Agent, 50 Oliver Street, Boston 7, Mass.

The Southern New England Telephone Co.:

G. G. Copeland, secretary and treasurer, 227 Church Street, New Haven 6, Conn.

New York Telephone Co.:

E. V. Moran, general commercial agent, 158 State Street, Albany 1, N. Y.

New Jersey Bell Telephone Co.:

E. H. Dyer, general commercial manager, 540 Broad Street, Newark 1, N. J.

The Bell Telephone Co. of Pennsylvania.:

Central Area—

Lane S. Hart, III, district manager-special accounts 210 Pine Street, Harrisburg, Pa.

Western Area—

R. D. Wolfe, commercial supervisor-connecting companies, 416 Seventh Avenue, Pittsburgh 19, Pa.

The Chesapeake & Potomac Telephone Co. of Baltimore City:

H. S. Boyle, Jr., general commercial manager, 320 St. Paul Place, Baltimore 2, Md.

The Chesapeake & Potomac Telephone Co. of Virginia:

R. W. Edwards, general commercial agent, 703 East Grace Street, Richmond 19, Va.

The Chesapeake & Potomac Telephone Co. of West Virginia:

J. W. Trammell, general commercial manager, 816 Lee Street, Charleston 1, W. Va.

Southern Bell Telephone & Telegraph Co.:

General Supervisory—

T. Barton Baird, general commercial manager, Hurt Building, Atlanta 1, Ga.

General Staff—

R. N. Pfaff, connecting company relations manager, Hurt Building, Atlanta 1, Ga.

Divisions—

F. M. Malone, Alabama manager, Birmingham, Ala.

A. B. Dooley, Florida manager, Jacksonville, Fla.

E. B. Emrey, Georgia manager, Atlanta, Ga.

J. M. McAlister, Kentucky manager, Louisville, Ky.

Vernon Baird, Louisiana manager, New Orleans, La.

T. E. Harris, Mississippi manager, Jackson, Miss.

E. H. Wasson, Carolinas manager, Charlotte, N. C.

W. E. Duncan, Tennessee manager, Nashville, Tenn.

The Ohio Bell Telephone Co.:

W. W. Clampitt, general contract agent, 42 East Gay Street, Columbus 15, Ohio.

The Cincinnati & Suburban Bell Telephone Co.:

T. E. Green, general commercial manager, 225 East Fourth Street, Cincinnati 2, Ohio.

Michigan Bell Telephone Co.:

T. H. Dawson, general development supervisor, 1365 Cass Avenue, Detroit 26, Mich.

Indiana Bell Telephone Co.:

T. D. Dial, general contract agent, 240 North Meridian Street, Indianapolis 9, Ind.

Wisconsin Telephone Co.

G. B. Rogers, general commercial manager, 722 North Broadway, Milwaukee 2, Wis.

Illinois Bell Telephone Co.:

H. G. Lankford, general commercial agent, 212 West Washington Street, Chicago 6, Ill.

Northwestern Bell Telephone Co.:

Iowa Area—

E. T. Hines, commercial representative — connecting company relations, 909 High Street, Des Moines 9, Iowa.

Minnesota Area—

P. E. Fader, connecting company supervisor, 420 Third Avenue South, Minneapolis 2, Minn.

Nebraska-South Dakota Area—

H. K. Owen, commercial representative — connecting companies, 118 South Nineteenth Street, Omaha 2, Neb.

North Dakota Area—

A. S. Hook, commercial engineer, 105 Fifth Street North, Fargo, N. D.

Southwestern Bell Telephone Co.:

Eastern Missouri and Arkansas Area—

D. C. Coombes, connecting company agent, 1010 Pine Street, St. Louis 1, Mo.

Western Missouri and Kansas Area—

B. B. Sproul, connecting company agent, 324 East Eleventh Street, Kansas City, Mo.

Oklahoma Area—

E. B. Jeffrey, connecting company agent, 405 North Broadway, Oklahoma City, Okla.

Texas Area—

Don Hunsaker, connecting company agent, 308 South Akard Street, Dallas, Tex.

The Mountain States Telephone & Telegraph Co.:

M. R. Cahoon, general intercompany agreements engineer, 931 Fourteenth Street, Denver 2, Colo.

The Pacific Telephone & Telegraph Co.:

Washington and Idaho Area—

Geo. A. Walker, general commercial agent, 1200 Third Avenue, Seattle 1, Wash.

Oregon Area—

C. G. Duffin, general commercial agent, 730 S. W. Oak Street, Portland 5, Ore.

Northern California Area—

H. W. Edelen, general commercial agent, 140 New Montgomery Street, San Francisco 5, Calif.

Bell Telephone Co. of Nevada:

H. W. Edelen, general commercial agent, 140 New Montgomery Street, San Francisco 5, Calif.

Southern California Telephone Co.:

K. D. Schwab, general commercial agent, 740 South Olive Street, Los Angeles 55, Calif.

The Bell Telephone Co. of Canada:

Eastern Area—

J. R. Collins, general commercial manager, Beaver Hall Building, Montreal, Quebec.

Western Area—

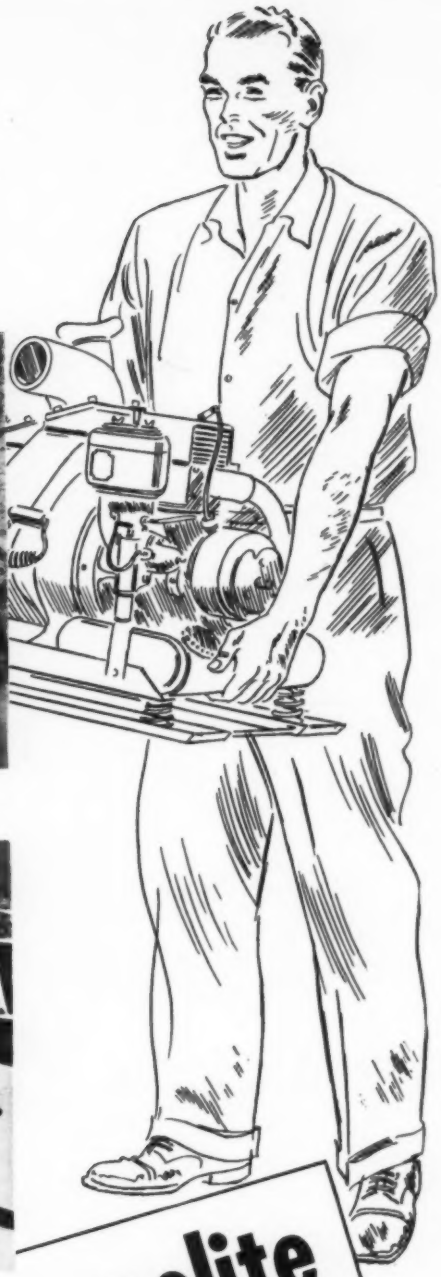
J. Rhind, general commercial manager, 76 Adelaide Street West, Toronto, Ontario.

[NOTE: An obsolete list of Bell System connecting company officials was inadvertently published on pages 320 and 321 of TELEPHONY's 1946 Directory of the Telephone Industry. It is suggested that the above list be inserted on those pages of the Directory. It also is suggested that the Directory Index on page 9 be changed to show: "Bell Connecting Company Officials.....320-321."]

Put These Pictures *into ACTION*

Above — Pump out water faster . . . handle heavy liquids and solids easier . . . with a fast self-priming Homelite Portable Pump.

Below — Operate electric tools . . . saws, grinders, drills and many others . . . with a Homelite Portable Generator. Use it also for floodlights on night jobs.



Do you want to see these pictures come to life? Do you want to see how you, like thousands of others, can cut operation costs . . . get more work done in less time . . . with Homelite Portable Gasoline-Engine-Driven Pumps and Generators?

Then write, *now,* and ask us to have a Homelite Representative arrange to give you a free demonstration. Without obligation to you in any way, he'll show you, *right on your job,* Homelite Portable Pumps and Generators *in action.* You ask him questions. Run the units yourself. You can find out everything you want to know about their design and operation. You can see, for yourself, just what you can expect in on-the-job performance. Write today.

Homelite
CORPORATION
Port Chester, New York
Portable Pumps Generators and Blowers
GASOLINE-ENGINE-DRIVEN

COURTS and COMMISSIONS

New Owner Halts Objection To REA Construction

W. G. Hartman has purchased an option to buy the properties of the Danbury-Lebanon Telephone Co., Danbury, Neb., owned by Elmer J. Crisp, and has withdrawn before the Nebraska State Railway Commission the latter's objection to the paralleling of 21 miles of company rural lines by the newly formed Twin Valleys Electric Association.

The commission promptly issued a permit to the association to proceed with construction. (TELEPHONY, June 22, page 28.) The association in turn withdrew its request for a rehearing on the original order denying authority to construct the parallel lines, and this ends a threat to test the validity of the law upon which the commission based that denial. That law forbids construction by a power company of lines that interfere with the efficient operation of telephone company lines unless an agreement for payment of damages is reached.

V V

Southwestern Bell Acquires Texas Independent Exchanges

The Bandera and Pipe Creek (Tex.) telephone systems have been acquired by the Southwestern Bell Telephone Co., which will take over operation of the exchange about September 1, L. Rust, president of the Del Rio & Winter Garden Telephone Co., has announced.

Bandera and Pipe Creek will be in the San Antonio suburban district of the Southwestern company, Mr. Rust said. Maintenance and operation of the two systems will be under the jurisdiction of the San Antonio suburban district headquarter office.

V V

Rate Protest Filed by California Subscribers

Ninety residents of San Lorenzo, Calif., made formal complaint to the California Railroad Commission July 18 against the Pacific Telephone & Telegraph Co., stating that service was poor and rates too high.

A call to Oakland, Calif., from San Lorenzo costs 15 cents and it often takes nine or 10 minutes to get the call through, the complaints said. Oaklanders can call nearby Hayward — a greater distance than Oakland to San Lorenzo—for only five cents. Telephone company officials have said previously that lack of equipment and sufficient operators have greatly handicapped service in many communities.

V V

English Electric Co., Ltd., Buys Marconi Company

The sale of the Marconi's Wireless Telegraph Co., Ltd., was recently confirmed by the annual meeting of Cable & Wireless Ltd. (Holding) at London.

The price involved in this major telecommunication sale is stated to be £3,750,000 for which the buying company, the English Electric Co. Ltd., receives the entire share capital.

V V

Delaware to Sue For Wire Tax

State Treasurer Jesse S. Cooper revealed July 16 that he had requested Attorney Gen. J. Clair Killoran to institute suit against the American Telephone & Telegraph Co. for $138,489.70 covering unpaid wire millage tax in Delaware for a 20-year period.

Mr. Cooper gave the attorney general a detailed account of the taxes due from 1927 through 1946 and in his letter accompanying the statement, said in part:

"The company has in each year of this period of years contended that the state of Delaware tax, in this case, is in violation of the provisions of the United States Constitution in that it constitutes a limitation upon or a regulation of the interstate commerce and hence a burden upon such commerce.

"For the last 20 years it has been the practice of each state treasurer to file this annual objection of the American Telephone & Telegraph Co. with the attorney general. Nevertheless, no formal action has ever been taken by the state to enforce the collection on this tax or to obtain a decision to the constitutionality of the law in question.

"In my opinion 20 years is too long a period to permit a matter like this to lie without question. I believe that a court decision should be obtained. If our law is constitutional the company should, and I believe, will, pay the tax. If the law is unconstitutional the company should be absolved of this tax liability and be relieved of the necessity of filing this return."

In asking the attorney general to institute proceedings, Mr. Cooper requested that the total amount of tax and accrued interest be sought.

The law, under which the tax is levied, is not a new one, having appeared in the revised code of 1915 as well as the revised code of 1935. It provides a tax of 60 cents per mile for the longest wire in the state, 30 cents per mile for the next longest wire and 20 cents per mile for all other wires.

V V

Continue R&H Company Hearing to July 30

Hearing on a petition to discontinue telephone service of the R & H Publishing Co., Chicago, charged with using the six telephones to dispense racing information, was continued to July 30 by the Illinois Commerce Commission. (TELEPHONY, July 20, page 34.)

Removal of the instruments had been recommended to the Illinois Bell Telephone Co. by Chicago Police Commissioner Prendergast.

V V

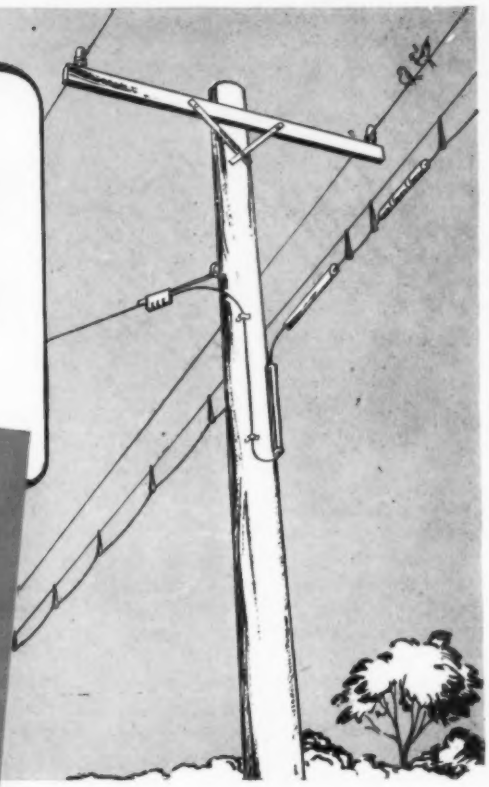
Michigan Bell to Inaugurate Highway Telephone Service

Michigan Bell Telephone Co. plans to inaugurate general mobile radiotelephone service on all important highways in the southern part of the state by next spring.

President Thomas N. Lacy announced that the company will apply to the Federal Communications Commission for permission to install trans-

Greater protection for drop wire with

DURABLE, WEATHER RESISTANT NEOPRENE



A SHEATH OF NEOPRENE RESISTS...

- ABRASION AND WEAR
- SUNLIGHT AND WEATHER
- HEAT AND FLAME
- ACID FUMES AND SMOKE
- COMPRESSION CUTS

NEOPRENE has made possible the development of a new-type telephone drop wire with improved service life. The tough, durable neoprene sheath gives the insulation real protection!

When you select drop wire—or any type of wire and cable—make sure it is jacketed with neoprene. This is your assurance that the sheath will give longer service—resisting oxygen and ozone, sunlight and weathering, abrasion, heat, flame and many chemicals.

For the latest technical information on neoprene, read *The Neoprene Notebook.* Gives you new and interesting stories on how neoprene serves all industries.

WRITE FOR FREE SUBSCRIPTION TO THE NEOPRENE NOTEBOOK...

RUBBER CHEMICALS DIVISION
E. I. du Pont de Nemours & Co. (Inc.)
Wilmington 98, Delaware

BETTER THINGS FOR BETTER LIVING ... *THROUGH CHEMISTRY*

DU PONT

FOR BETTER WIRE AND CABLE, SPECIFY

DU PONT NEOPRENE

THE *VERSATILE* SYNTHETIC RUBBER

mitting and receiving stations at Detroit, Lansing, Grand Rapids, Flint, Jackson, Port Huron, Kalamazoo, and Bay City-Saginaw.

Mr. Lacy said that, although the proposed installation initially will operate as separate stations serving those and nearby communities, they later will become links in a general highway service, not only for southern Michigan but also to nearby states through similar Bell System installations.

The new service will provide autophone communication on highways south of the Bay City-Saginaw line in eastern Michigan and south of Grand Rapids in the western part of the state, Mr. Lacy said.

V V

Indiana Subscribers Ask Service Improvement

Indiana patrons of several small telephone exchanges have petitioned the Indiana State Public Service Commission asking that telephone service be improved.

An all-time record number of petitions asking for investigation of service is on file in the commission offices, it is said. Tariff Examiner J. B. Bailey has 12 on his desk, and other commission representatives have four or five.

Mr. Bailey blames labor and material shortages, and more critical patrons who feel that there should be an improvement in efficiency now that the war is over.

Mr. Bailey said at least 14 other petitions for hearings on service efficiency probably would be filed within the next month.

He said the commission had acted in only 10 cases within the last year. Usually, Mr. Bailey said, the commission finds that the petitioners had some reason to complain of the service and orders improvements.

One of the latest petitions was filed by Valparaiso subscribers of the Indiana Associated Telephone Corp. Petitioners, roused to action by the city chamber of commerce, demanded reduced rates and protested long delays and interruption in service.

A similar petition was filed by Franklin residents against the United Telephone Co. some time ago. The hearing date was continued from July 30 to August 20.

Patrons of the Greene County Telephone Corp. were to voice their complaints July 24.

Other petitions named the Millville Telephone Co., the Cross Plains Telephone Co., the Youngstown Telephone Co., the Citizens Telephone Co. of Cambridge City, the Ackers Telephone Co. of Wingate, the Hope Independent Telephone Co., the Fountain Telephone Corp. of Attica, and the Midwest Utility Telephone Co. of Petersburg.

The Cross Plains hearing was to be held August 1 at Versailles and the Youngstown complaint August 2 at Terre Haute.

Two other petitions, Mr. Bailey said, stem from dissatisfaction with services. In one, petitioners ask the right to switch service from the Orange Mutual Telephone Co. to the Rushville exchange of the Citizens Independent Telephone Co. In the other, the petition asks for a switch from a small co-operative to the Anderson exchange of the Indiana Bell Telephone Co.

Mr. Bailey said a hearing would be held late in August on the complaint of the St. Paul Civic Club, which asked an investigation of service at the St. Paul exchange of the Hope Independent Telephone Co.

V V

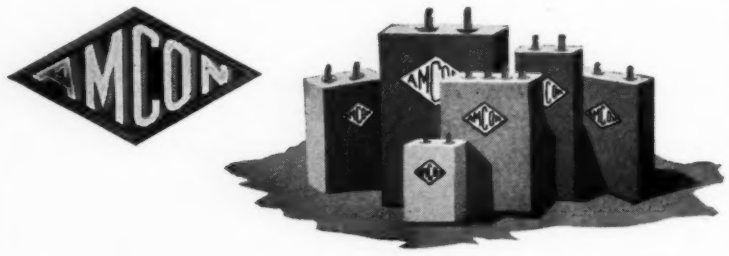
Utility Radio Service Authorized at Columbus, Ohio

Looking toward the establishment of a radio-communication service for power utilities, as provided for in the commission's report of allocations of May 25, 1945, the Federal Communications Commission July 18 granted construction permits to the city of Columbus, Ohio, for an experimental Class 2 radio station. This is the first application and authorization of its kind.

Two transmitters will be located at 3305 Karl Road, Columbus, employing one mobile station having 20 units installed on city-owned vehicles. The system will be operated from either of two remote control points: The Light Plant, 580 Dublin Ave., or at the Water Works, 640 Dublin Ave.

The authority granted this station is on an experimental basis in connection with the development and testing of radio-communication systems in the proposed utility radio service. In the operation of any electric light, power or water systems, numerous emergencies develop, where prompt and effective action must be taken to correct the difficulty and protect the remainder of the system. This requires a reliable communication system between the office and service or maintenance crews, and the applicant's experimental program involves the development of radio facilities to provide a communication system for this purpose.

Operation of both fixed station and mobile units will be on the frequency 153.59 megacycles (assigned tempo-



FOR DEPENDABLE RELIABLE SERVICE

AMERICAN TELEPHONE
AND
TELEGRAPH CONDENSERS

SPECIFICATION SHEETS ON REQUEST

AMERICAN CONDENSER CO.
4410 No. Ravenswood Ave., Chicago 40, Ill.

Now!

CONSTRUCTION AND MAINTENANCE SERVICES
FOR
TELEPHONE COMPANIES

INCREASE YOUR OPERATING EFFICIENCY
DECREASE YOUR MAINTENANCE COSTS!

Let us build a new outside plant for you, or repair your present plant. We can reduce your maintenance costs by removing rings on your present cable and spinning it. We specialize in general outside plant work.

LAWLOR-NEALE
TELEPHONE CONSTRUCTION AND MAINTENANCE COMPANY, INC.
432 WEST CRANE STREET, TOPEKA, KANSAS PHONE 31829

An Important Book!

"Inductive Coordination of Electric Power and Communication Circuits"
by LAURENCE J. CORBETT
Member, American Institute of Electrical Engineers, Fellow, American Association for the Advancement of Science

is the only one combining under one cover the essentials of this important subject involving many divisions which have been treated separately and occasionally in numerous reports and articles. It includes results of the author's researches, fitted into a broad survey of the principles applying to Inductive Coordination. It is NOT a compilation of catalog data or undigested reports. It is a carefully developed treatment and clarification of a subject which, though important, has received too little attention. Many diagrams illustrate the practical application of the principles in a manner very readily followed. The variation in values of factors is presented, and theory and practice under these conditions are carefully differentiated.

CHAPTER HEADINGS:

I. Elements of the Problem.
II. Susceptiveness and Coupling Factors.
III. Effects of Conductor Arrangements.
IV. Transpositions.
V. Coordinated Transpositions.
VI. Telephone Circuits on Power Structures.
VII. Power System Wave Shape.
VIII. Transformer Exciting Current and Bank Connections.
IX. Flow of Residual Currents.
X. Control of Residuals.
XI. Miscellaneous Values and Remedial Measures.
XII. Susceptiveness Factors.
XIII. Low-Frequency Methods.
XIV. Miscellaneous Methods.
Appendices • Bibliography • Index

Price: $1.75

TELEPHONY PUBLISHING CORPORATION
608 S. DEARBORN ST., CHICAGO 5, ILL.
Telephone WABash 2435

4 STEPS TO
PROFITABLE OPERATION

1. ORIGINAL COST STUDY
To establish plant value.
2. CONTINUING PROPERTY RECORD
To keep value up-to-date.
3. MINIMUM PLANT IMPROVEMENT
To raise quality of service.
4. HIGHER APPROVED RATES
To achieve sound earning basis.

Without obligation, let us show you how you can complete this program at low cost, using your own people.

WRITE US

E. B. MATHEWSON COMPANY
ENGINEERS
612 No. Michigan Ave. Chicago, Ill.

rarily), with the land station having a power of 600 watts maximum input to the final radio frequency stage, and the mobile units using 75 watts maximum input power. Special emission for frequency modulation (telephony) will be employed.

V V

Line Construction Dispute Results in Jail Sentence

A long-standing dispute over construction of telephone lines in Henrico County, Va., came to a head July 19 when Judge Julien Gunn in Richmond County Circuit Court ordered L. O. Ogburn and his son, L. O. Ogburn, Jr., placed in the county jail until the parties "shall have purged themselves of such contempt" of the court.

The Ogburns, who live outside of Varina, appeared in court in answer to a petition from F. A. Dabney, a neighboring farmer who wants telephone lines extended to his home.

An order was entered in the Henrico County Circuit Court by Judge Gunn April 13, 1945, providing that Mr. Dabney should be allowed to construct telephone lines which had been destroyed during a storm some months ago.

The court was informed that Mr. Dabney has been interfered with in attempts to construct pole lines by the Ogburns and it was in contempt of this order that Judge Gunn sent the Ogburns to jail.

The order also provided that the sheriff and police chief afford Mr. Dabney and his employes police protection in seeing that the telephone lines are replaced pursuant to the order of 15 months ago.

V V

Levies Utility Tax

A 10 per cent municipal tax on telephone and other utility bills was imposed July 18 by the city commission of Punta Gorda, Fla. The levy will apply to electric, bottled gas, water, telephone and telegraph services, and will be limited to a maximum of $25 for each consumer for each service during one month. The first collections will be made in October on September bills.

V V

New Owner at Emerson, Ark.

E. G. Gunnels of Emerson, Ark., has been authorized by the Arkansas Public Service Commission to sell the Emerson Telephone Exchange to Mrs. Ray Bradley.

V V

New Lyme, Ohio, Company Sold

The Ohio Public Utilities Commission on July 26 approved the joint application of the New Lyme (Ohio) Telephone Co. to sell and convey all its property and assets to the Cherry Valley (Ohio) Telephone Co.

V V

Ohio Company Sold

Joint application of Clinton Air Line Telephone Co. to sell all of its property and assets to Northern Ohio Telephone Co., Bellevue, was approved July 26.

V V

Summary of Commission Rulings and Hearings

Federal Communications Commission

July 18: Granted American Telephone & Telegraph Co., New York Telephone Co., New Jersey Bell Telephone Co., Chesapeake & Potomac Telephone Co. and Chesapeake & Potomac Telephone Co. of Baltimore City authority to construct cable and install carrier equipment between New York City and Atlanta, Ga., and other points, to provide 1,045 telephone channels and one program channel. Estimated cost, $6,217,000.

July 18: Granted Ohio Bell Telephone Co. and American Telephone & Telegraph Co. authority to construct and operate cable between Youngstown and Salem, Ohio. Estimated cost, $300,300.

July 18: Granted American Telephone & Telegraph Co., Lawrenceville and Ocean Gate, N. J., three months' authority to point-to-point radio-telephone stations using regularly licensed equipment, frequencies, power and emission to communicate with Ministry of Posts, Telephones and Telegraphs at Brussels, Belgium.

August 6: Hearing on joint application of Carolina Telephone & Telegraph Co., purchaser, and Eastern Telephone Co., seller, for certificate that such sale will be advantageous to whom service is rendered.

California Railroad Commission

August 21: Hearing on application of California Water & Telephone Co. for authority to give exchange service at Idyllwild. Postponed from July 5.

Illinois Commerce Commission

September 17: Hearings on applications of Illinois Commercial Telephone Co. for authority to increase rates.

Kansas Corporation Commission

July 15: Recommended order issued on application of Netawaka (Kan.) Mutual Telephone Co. for authority to make rate changes.

July 23: Recommended approval for filing by Southwestern Bell Telephone Co. of general exchange tariff for rural line service.

September 9: Hearing on boundary complaint of Jake French against Linwood (Kan.) Telephone Exchange and Mutual Telephone Co., Eudora.

September 10: Hearing on service complaint of Clark C. Miller against Consolidated Telephone Co., Burrton.

September 10: Hearing concerning filing by Western Light & Telephone Co., Inc., of rate schedule for non-profit rural co-operatives. Postponed from July 15.

Lousiana Public Service Commission

July 29: Hearing on alleged contempt of commission's order by Oak Grove (La.) Telephone Co.

New York Department of Public Service

July 29: Hearing concerning service, equipment and appliances of Delaware Telephone Co., Inc., in Roscoe central office district.

Oklahoma Corporation Commission

September 7: Hearing on application of Fred Barrett for order on Oklahoma Automatic Telephone Co. to restore service at Clarita. Continued from July 16.

September 16: Hearing on application of P. B. Odum for telephone service from Southwestern Bell Telephone Co. at Oklahoma City. Continued from July 17.

V V

Virginia T&T Installs New Equipment at South Boston

Installation of newly arrived equipment at the Virginia Telephone & Telegraph Co.'s South Boston, Va., exchange is expected to be completed early this fall, W. B. Garnett, company manager, has announced. Mr. Garnett on July 1 succeeded W. B. Bridgforth, who resigned his managerial duties.

A native of Prince Edward County Mr. Garnett attended Maryville College at Maryville, Tenn., where he studied industrial chemistry. After leaving college in 1942 he was employed at the Blackstone and Farmville exchanges of Virginia T&T until entering the armed forces in January, 1943.

After three years of service in the European Theater with Hodges' First Army, Mr. Garnett returned to work for the telephone company as commercial supervisor at Camp Pickett, Va. In this capacity he represented the telephone company in all the problems of giving telephone service to the thousands of replacement troops which were overseas at the end of the war.

V V

Transfer Creek, Neb., Manager

ELLA STEUCK, for 17 years connected with the Battle Creek, Neb., exchange of the Nebraska Continental Telephone Co., as local manager and cashier, has been transferred to the larger exchange at Madison.

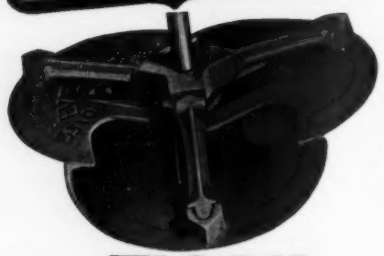
V V

Colombia to Buy U. S. Goods

The Colombian Government is sending a mission to Panama, Trinidad, Curacao, and possibly Puerto Rico to purchase $1,000,000 worth of road machinery and telephone and telegraph wire. This surplus material is for sale by the United States government.

3
3 ADDITIONAL SPEECH CHANNELS ON YOUR PRESENT LINE
. . . with FEDERAL's 9-B-1 Carrier Telephone System
THREE, high-grade telephone channels are added to your open wire line with Federal's 9-B-1 carrier. At a fraction of your original pole line construction costs, you get four times the message capacity on up to 200 miles of line. (With properly spaced repeaters, its range is practically indefinite.)
Engineered to finest communication standards, this carrier terminal affords an ease and dependability of operation that makes it especially valuable to telephone, railroad and pipe line companies. A Federal engineer will be glad to give you full details. Write Department H448.
3 SUPERIOR FEATURES OF FEDERAL DESIGN
Automatic Pilot Control!—Regardless of weather or temperature changes, top performance is assured. Transmission level and flat gain frequency characteristics are maintained by automatic pilot regulation.
Maximum Accessibility!—All components which may require adjustment or maintenance are front-of-panel mounted. Inert components such as transformers, filters, capacitors are mounted at the rear, and are hermetically sealed, with glass sealed terminals for untroubled service.
Compact! Saves Rack Space!—Small components, more resistant to vibration and damage, are combined in the Federal 9-B-1 in a space-saving setup. Complete terminal, including power supply and line and directional filters, mounts on one standard 19" relay rack, 8' 6" high.
Write for technical bulletin for full data.
Federal Telephone and Radio Corporation
In Canada—Federal Electric Manufacturing Company, Ltd., Montreal
Exp. Distributor—International Standard Electric Corporation
An IT&T Associate
FTR
Federal Telephone & Radio
Newark 1, New Jersey

EVERSTICK ANCHORS...



FOR SPEED IN INSTALLATION

The exclusive Everstick nut housing locks the Anchor firmly on the rod. This speeds up installation. Plates are so designed, that they expand easily into undisturbed earth, and extra holding power is achieved. Made of tough, rust-resistant malleable iron. Write for bulletin.

EVERSTICK ANCHOR CO.
FAIRFIELD, IOWA

SINCE 1889
NATCO
CLAY CONDUIT

The proved and standard Protection for Underground Telephone Cables.

Cheapest in the long run. Highest quality and a full line of shapes.

National Fireproofing Corp.
202 E. Ohio Street, N. S.
PITTSBURGH, PA.

Lawrenceville, Va., to Have Automatic Dial System

Installation of an automatic dial system in Lawrenceville, Va., within the next three years has been announced by officials of the Home Telephone & Telegraph Co.

After complaints by the Lawrenceville Chamber of Commerce concerning "inadequate and inefficient" telephone service, company officials admitted service was inadequate to take care of present business which has expanded in the past several years. They explained that the company has on order approximately $1,000,000 worth of equipment which has been delayed by strikes, labor and material shortages and other factors beyond their control.

A questionnaire distributed among members of the local commerce chamber indicated the four most frequent complaints were: Operator's delay in answering signals; delays in making long distance calls; delays in disconnecting when call is completed and it is desired to place another call, and inability to have telephones installed.

V V

Army Ordered to Stop Secret Recording

The War Department has prohibited its officers and employes from recording any more telephone conversations without notifying the other party that it is being done.

The order, issued by Secretary Robert P. Patterson, followed up testimony before the Senate War Investigating Committee that recording devices were attached to many War Department telephones and that transcripts were made of calls by members of Congress.

The text of Mr. Patterson's order, dated July 12, was as follows:

"Although the usefulness of telephone recording machines is recognized in expediting the conduct of business, no officer or employe of the Army will make such recordings unless he informs the other party participating in the telephone conversation that the recording is being made."

V V

Gary, Ind., Traffic Supervisor Wins Bronze Vail Medal

Quick action in summoning aid to a couple overcome by carbon monoxide gas March 5, 1945, has won Mrs. Evelyn Kroh, Gary, Ind., telephone traffic supervisor of the Illinois Bell Telephone Co., the bronze Vail Medal and $100.

When Patricia Thornton, operator, heard Orville Oliver's faint cry of "Doctor," she immediately transferred the call to Mrs. Kroh who sent for an ambulance and the fire department inhalator. Firemen found Mrs. Oliver unconscious and her husband in a semi-conscious state as a result of escaping fumes. Both were revived.

V V

Police May Get Radio-Telephones

A unique plan calling for the installation of a combination two-way police radio-telephone system in Montreal, Quebec, Can., has been approved by officials of the police department and the Bell Telephone Co. of Canada.

The frequency modulation system, if accepted by the City Executive Committee, would mark Montreal as being the first city in Canada to install this plan for police operations.

Answers to Traffic Questions on Page 23

(1) Please refer to preface for the answer to this question.

(2) Messenger calls are classified as person calls, therefore, the letter "P" should be entered in the "class" space.

(3) If the party is calling a number, ring it. If not, try to encourage him to hang up. In larger offices, such calls are referred to the supervisor.

(4) We are not permitted to use our toll circuits to obtain such information.

(5) "Part charge" is a term used where part of the message is collected at one station and the balance of the charge is billed to another station. For example, on a call from a pay-station, a report charge is paid at one station, and the call is completed from another station.

The original ticket is used for completing the call and a second ticket is written to account for the report charge collected at the first station. "Part chg" is entered on the face of the second ticket at the top and "sec tkt" on the back of the original ticket. The "part charge" entry is necessary for billing purposes, in addition to other entries prescribed by the operating practice.

Planning for Growth

(Concluded from page 17)

(4) An extension of the cable plant may be made.

(5) A transfer may be made of a part of the cable plant from one route to another.

(6) An entire new cable may be installed.

For each of these different methods of relief there are numerous variations which may be employed to meet specific conditions. *Fig. 4* shows an example of one method of feeder relief by the use of a new cable. In this instance, the initial feeder cable has reached a state of congestion. Assuming that present and probable future demands indicate the need for the installation of an additional feeder cable, this necessary relief can be accomplished by dividing the service load as is indicated in *Fig. 4*. I would like to point out, however, that the new feeder cable can be employed in other ways to provide the necessary relief, and any one of these might be adopted depending upon the particular conditions that exist in the present plant arrangement, and the conditions to be met in serving subscribers in the area in the future.

At the present time, there are 7,100 miles of conduit ducts in use in Chicago and some 3,967,000 miles of wire are contained in the underground cables. In addition, there are 602,000 miles of wire in aerial cable and 22,000 miles of drop and block wires.

The present telephone plant layout, of course, has evolved over the period of time since telephone communication was first introduced commercially in Chicago in July, 1877. The development of improved equipment constantly since that time has altered continuously the plan, as well as the equipment and facilities, for furnishing the service. These improvements in the art of telephone communications have been adopted as rapidly as it has been feasible to introduce them in the overall plan of providing service.

Since these improvements have been most favorable over the long term from a cost viewpoint as well as that of improved service, their adoption has been advantageous to the subscriber from the standpoint of both rates and better service with the result that he receives more real value in telephone service today than at any time in the history of the telephone business. The present telephone plant is undergoing further

SERVICE!

Yes! Years more service with

TELEPRENE*

DROPWIRE

You can get added years of GOOD SERVICE at this vulnerable point in your plant by specifying Teleprene Drop Wire.

Teleprene is jacketed with Neoprene which is highly resistant to sunlight and weathering, abrasion and wear, high voltage, acid and chemicals, heat and flame.

The difference in cost, per drop, is **PENNIES,**
The difference in Life is **YEARS**

For other outstanding features of Teleprene see our bulletin *"The Story of Teleprene Drop Wire"*

TELEPRENE; the DROP WIRE with the NEOPRENE Outer Jacket

Prices, delivery and samples obtainable through your nearest GraybaR Office

Order Teleprene by WHITNEY BLAKE Catalogue No.

17TBP-R Reinforced Parallel
17TBP Parallel
17TB2-R Reinforced Twisted Pair
17TB2 Twisted Pair

* *Reg. Applied for, U.S. Pat. Office*

THE WHITNEY BLAKE CO.
New Haven, Conn.
Well Built wires since 1899

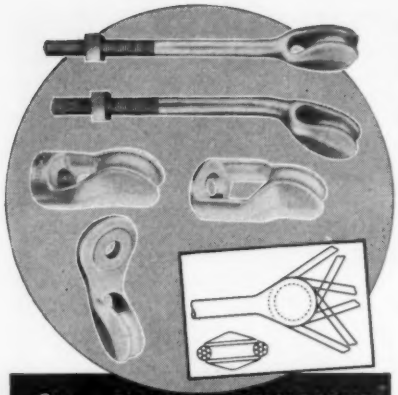
changes constantly and, therefore, the problems of planning for extensions of the plant must be approached from the viewpoint of how best to add to and modify what now exists to meet the needs of the future. It is essential that each addition to the operating plant be so planned that it may take its place economically in the over-all operating pattern if customers are to be provided with satisfactory service at rates which will result in the largest practicable number of people enjoying the use of telephone service in their daily activities.

In meeting the tremendous requirements for telephone communications during the war years with a minimum of critical materials, the normal plant margins have been greatly reduced or even eliminated. A substantial portion of the current demand for telephone service remains unfilled. As recently as November 1, 1945, there were 52,000 requests for telephone service in Chicago which could not be met because of the shortages of station instruments, central office equipment or outside plant facilities. The equipment and plant necessary to care for the accumulated demand are becoming available at an increasing rate and the held applications for service will diminish rapidly.

The magnitude of the construction program during the postwar years places a great responsibility on those who are developing the plans for this program. In addition to the immediate work of caring for the unfilled applications for service, relieving the overloaded condition of the plant and adding central office equipment to restore the prewar speed of local calls, there are many new developments and improvements in equipment to be incorporated in the over-all plan of providing telephone service. These developments and improvements include resumption of the prewar program of improving the type of equipment on customers' premises and the introduction of new forms of intercommunicating equipment; strengthening of the long distance network, including the use of the new coaxial cable, and possibly radio relay systems on important toll routes, and for television program transmission; replacement of manual switchboards with dial equipment for local exchange service; development of the use of dial equipment for toll and long distance service enabling the toll operator to dial subscribers' numbers at distant points; customer dialing of certain toll calls with associated equipment which will automatically record the details of the call for billing purposes; resumption of the program extending rural service with new developments of carrier systems and high strength steel wire, and the extension of telephone service by the use of improved radio-telephone equipment to motor vehicles both within cities and while traveling main highway routes.

Future social and economic trends are unusually difficult to predict because of wartime dislocations of individuals and industry, and the postwar readjustment problems facing Chicago, the United States, and the entire world. Because of the recognized hazards inherent in any present day forecasting, it is imperative that people engaged in the studies of market possibilities and those responsible for the engineering of relief, and new equipment and plant projects have a good understanding of each other's problems. In this way, alternative methods may be used to the maximum practicable extent and the advantages of flexibility may be employed to assist in avoiding the penalties which might otherwise be incurred.

Valuable experience has been gained in engineering as well as in the operation of the telephone plant through the period of acute shortages of equipment and facilities, and the general understanding of the interrelated forecasting and engineering problems is probably better today than ever before.



New CHANCE THIMBLEYE
...gives complete strand protection...

Chance Thimbleye Guying Fixtures have been redesigned to give added protection to guy strands at varied angles of pull (see sketch). The improved eye forms a perfectly shaped "thimble" at all angles as the strand groove extends all the way around to form a complete circle.

Always specify Chance Thimbleye and get these latest improvements. Order through your regular source of supply.

C469A

A·B·CHANCE CO. CENTRALIA MISSOURI

"Endurance"
TELEPHONE WIRES
RUBBER—PLASTIC

DROP—BRIDLE—INTERIOR
DUCT—FIXTURE—TREE
GROUND

Our personnel is experienced in working to exacting specifications, utilizing advanced techniques and modern equipment.

For prices and delivery direct inquiries on your requirements to

GENERAL INSULATED WIRE WORKS, INC.
PROVIDENCE, RHODE ISLAND

PREMAX

Just Off the Press!
"IDENTIFICATION For Public Utilities"
Send for a copy on your firm's letterhead.

Premax Products
Division Chisholm-Ryder Co., Inc.
4607 Highland Ave. Niagara Falls, N. Y.

Makes St. Louis-Honolulu Call from Moving Vehicle

The first trans-oceanic telephone call from a moving automobile in St. Louis to an office in Honolulu was completed July 16.

Roger Pierce, a Chicago radio engineer en route to Hawaii, put in a station-to-station call to Honolulu from a Southwestern Bell Telephone Co. automobile equipped with a radio-telephone. It took eight minutes to establish the connection.

Mr. Pierce chatted for 20 minutes with a group of executives of the Mutual Telephone Co in Honolulu. His call was transmitted by radio to the switchboard operator in the telephone building. It went by wire to San Francisco, was relayed by radio to Honolulu and then by telephone to the recipient.

V V

Sweet Music Is Stimulus to Workers

Music-while-you-work was started July 17 at the accounting office of New Jersey Bell Telephone Co., Elizabeth, N. J., as an incentive to volume and efficiency.

Taking its cue from the piped-in music at war plants New Jersey Bell provides record music from a turntable centrally located in the building and transmitted to the various departments through 35 amplifiers.

Daily programs are listed on bulletin boards. The company plans several 15-minute musical interludes and an hour of lunch music.

V V

Plan Extensive Improvements At Grant City, Mo.

Extensive improvements are contemplated for the Grant City (Mo.) Telephone Co., Bert Miller, president, and Jay W. Barker, company secretary, recently notified stockholders.

This will include the purchase of several thousand dollars in repairs and new equipment.

It is expected after repairs and improvements have been made that permission will be asked to raise telephone rental rates.

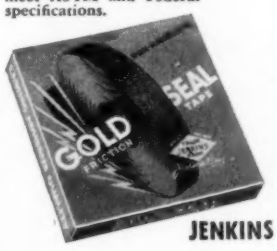
V V

Warrenton, N. C., Exchange Sold

The W. H. Pridgen Telephone Co., Warrenton, N. C., has been sold to the Carolina Telephone & Telegraph Co. The Pridgen company, consisting of six lines and 100 poles was privately owned and operated by its founder and his son, A. D. Pridgen. The new owners plan to rebuild the lines and add more battery power where needed. The company had been in operation since 1908.

"Take your time, lieutenant... this GOLD SEAL will hold him!"

Jenkins Bros. also make Diamond Seal Friction and Rubber Tapes which meet ASTM and Federal specifications.



Every single roll of Jenkins Gold Seal Tape has exceptional grip and staying power simply because it has more tensile strength in the fabric, more lasting tackiness in the friction compound. That's not boasting – that's *testing* . . . at every step in processing.

Won't ravel or peel – won't dry out – sealed in cellophane to reach you factory-fresh. Jenkins Bros., Rubber Div., 80 White St., New York 13.

JENKINS Gold Seal Tape

FRICTION . . . RUBBER

LEADING TELEPHONE COMPANIES STANDARDIZE ON

P&H 46 PENTA

PENTA POLES

FULL LENGTH TREATED NORTHERN WHITE CEDAR

They are pleasing in color — neat in appearance.

P&H

PAGE AND HILL CO.

MINNEAPOLIS, MINNESOTA · 50 CHURCH STREET, NEW YORK, N. Y.

Distributed by AUTOMATIC ELECTRIC SALES CORPORATION STROMBERG CARLSON COMPANY

"STILL IN THE LEAD"

ALL the strength and durability inherent in steel are combined—with definite economies—in *Crapo* Galvanized Steel Strand. Heavy, ductile, tightly-bonded zinc coatings, applied by the famous *Crapo* Galvanizing Process, provide lasting protection against corrosion.

Ask the distributor of *Crapo* Galvanized Products near you or write direct for further information!

INDIANA STEEL & WIRE CO.
MUNCIE, INDIANA

Do More With Less Help!

SEYMOUR SMITH TELEPHONE PRUNERS

CUT FASTER, COVER MORE GROUND-Keen "Center-Cut" blade slices between two strong side supports. Branch is firmly gripped, quickly cut. Ask for prices.

SEYMOUR SMITH & SON, Inc.
900F Main St., Oakville, Conn.

Float entered in the annual festival at Leesburg, Fla., by the Florida Telephone Corp. called attention of the large crowd to the company's plan to convert the Leesburg exchange to dial operation.

Florida Rain Doesn't Dampen Advertising Project

A bevy of southern belles turned the dial set up on the Florida Telephone Corporation's Watermelon Festival float June 14 and even though the mock telephone lines on it were downed by rain, the call was recorded by an appreciative public.

The float, which was entered in the annual festival at Leesburg, Fla., was designed and built by members of the telephone company in support of their program to convert the Leesburg exchange to dial local service. An elaborate dial was set on it, made of plywood and mounted on a base covered in black to resemble a telephone shell.

Unfortunately, a heavy rainfall called an abrupt halt to the parade, damaged the lines on the float and sent the dial numbers into oblivion. It didn't affect the smiles of the fair occupants, however, or the excellent bit of publicity rendered the Leesburg project.

V V

New Board at La Cygne, Kan.

The Peoples Mutual Telephone Co., La Cygne, Kan., recently received a switchboard which had been on order since before the war. With installation of the new switchboard and with other equipment becoming available the La Cygne system will be completely modernized.

V V

McKrae Telephone Co. Advances L. H. Anderson

L. H. Anderson of Burlington, Kan., has recently been elected vice president of the McKrae Telephone Co. which has its headquarters at Fredonia, Kan.

Mr. Anderson has been with the company for eight years and was previously with the Central Kansas Telephone Co. He was manager of the McKrae office at Buffalo before going to Burlington several years ago to become manager of the Burlington exchange.

PERSONAL SAFETY

Pays Off!

One thing you can do *easily* to reduce accidents among your line crews is to equip your men with the proper types of safety belts. The Strauss Belt illustrated is built to U. S. Treasury specifications, of the best oak tanned leather. Sewing is done with hot waxed linen thread . . . hardware is of special drop-forged steel, tested for strength.

Portable manufactures a complete line of Strauss Safety Belts and Hats, each one designed specifically to reduce accident frequency. Write for literature.

Safety Division

PORTABLE PRODUCTS CORPORATION
484 Blvd. of Allies, Pittsburgh, Pa.

West Coast Company Starts Advertising Campaign

In an editorial appearing in *Cross Talk*, house organ of the West Coast Telephone Co., Everett, Wash., G. E. Kreiger, assistant general manager, stressed the importance of keeping the public informed of the company's progress on its service improvement program.

"In our belief," Mr. Kreiger wrote, "that the general public understood the service situation that faces us, we have not previously embarked on a campaign of information. We could have subscribed to full page newspaper ads and used other advertising media to tell our story to the public but that alone would not have been the cure for the complaint. Instead we have been concentrating our energies on correction of the service difficulties with which we are faced.

"While it appeared in the early war period that the many newcomers to the northwest were transient temporary residents, attracted here by the lucrative war-industry wages, it now appears that they are here to stay as permanent residents and telephone users. The emphasis placed on long distance calls by the boys in the armed forces has established a new long distance habit with all people."

Outlining the plans of the West Coast Telephone Co., Mr. Kreiger stated:

"It therefore appears that the increasing demand for telephone service will continue and the material and manpower situation will remain critical for some time thus delaying our return to normal service standards in many areas. It is therefore necessary for us to immediately undertake a campaign of information which will keep the public informed of the progress of our service improvement program. This will not only be carried on through the newspapers but will also appear in bill insert form and in radio announcements.

"Equally important in getting our message heard is use of the 'word of mouth' method. Each of us can be a spokesman for the telephone business in these embarrassing times when the public is demanding more telephone service than available equipment can handle.

"Tell your subscribers why their long distance calls are delayed. Tell them that long distance usage is now 30 per cent greater than it was in the busiest war period. Tell them that the system is now handling over twice the long distance calls which it handled at the beginning of the war. Suggest to them that they avoid placing unimportant calls.

"We do not have to apologize. The entire staff, operators, plant men, accounting staff and all others are doing a super job in keeping today's excessive telephone traffic moving in a somewhat orderly manner.

"It is true that the service standards

FREE

★

Have You Seen The Solar System?

It's a bi-monthly magazine of authoritative information on new developments in the capacitor field. Simply fill in the coupon below if you'd like to receive this easy-to-read technical publication regularly at your home or at your office.

1689

Solar Manufacturing Corporation
285 Madison Avenue, New York 17, N. Y.

Gentlemen: Please send me the SOLAR SYSTEM regularly, starting with the current issue.

Name.....

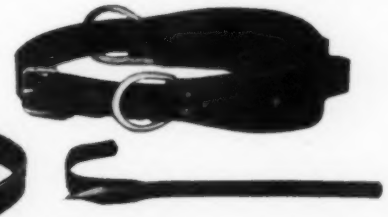
Address.....

City.....Zone No.....State.....

Play Safe!

Working aloft in all kinds of weather, the telephone lineman deserves the safest equipment that money can buy. Give him confidence in his own safety, by providing him with belts, straps and climbers made by KLEIN—producers of fine linemen's tools since 1857. Telephone men everywhere recognize this name as a synonym for complete reliability—so, for safety's sake, always

Specify **KLEIN**



DISTRIBUTED BY

AUTOMATIC ELECTRIC SALES CORPORATION

1033 WEST VAN BUREN STREET, CHICAGO 7, ILLINOIS

are not what we all would like them to be but at that they are not far from the accepted 'good service' standards of not so many years ago. We had progressed so far in improving service standards particularly on long distance, up to the beginning of the war, that the comparison today is embarrassing.

"You may be sure however that everything humanly possible is being done to relieve the situation and service quality after our 'growing pains' subside will reach a new high of perfection."

V V

Cordage, Inc., Extends Manufacturing Space

Cordage, Inc., 6650 S. Cicero Ave., Chicago, an affiliate of Kellogg Switchboard & Supply Co., has purchased the factory buildings and residential property of Ajax-Consolidated Co. at 3512-3520 W. Carroll Ave., Chicago, C. D. Manning, president of Cordage, Inc., has announced.

The new acquisition gives the company about 30,000 sq. ft. of manufacturing space in a three-story building and an adjoining two-story building. These structures will permit the company to enlarge its manufacturing processes and to expand output to embrace the firm's substantial back-log of orders.

Cordage, Inc., makes a line of retractile rubber-jacketed cords for home and industrial appliances. These new extension cords are sold exclusively by Kellogg Switchboard & Supply Co. under the trade name of "Koiled Kord," "Spirex" and "Flexelf."

Beginning with its retractile telephone cord, Cordage, Inc., developed several applications for its product through use by the armed services during the war. Following VJ-day, civilian types of this expanding and retracting cord have been placed on the market.

V V

Finch Appoints A. J. Eaves New Director of Sales

Augustus J. Eaves has been appointed director of sales for Finch Telecommunications, Inc., of Passaic, N. J., manufacturers of facsimile equipment and other electronic apparatus, in an announcement made July 12 by Capt. W. G. H. Finch, USNR, president of the Finch company.

W. G. H. FINCH (left), president of Finch Telecommunications, Inc., congratulates A. J. EAVES (right) newly appointed director of sales.

Mr. Eaves has spent many years in the Bell Telephone Laboratories as a development engineer of communications systems and for the past 20 years has been general communications sales manager of the Graybar Electric Co. in New York.

V V

Sylvania Names Electronics Division Sales Manager

George C. Connor has been appointed general sales manager of the Electronics Division of Sylvania Electric Products, Inc., according to an announcement made by Robert H. Bishop, director of sales for the company.

Mr. Connor, who has been with Sylvania Electric since 1934, will be responsible to Mr. Bishop for the merchandising and sale of electronic products made at the company's electronic plants at Boston, Mass., and Williamsport, Pa.

dependable
Cedar Poles
MICHIGAN POLE & TIE CO.
NEWBERRY—GRAND RAPIDS
MICHIGAN

Cedar Poles
MAC GILLIS & GIBBS COMPANY
Wells Bldg., Milwaukee 2, Wis.
★ ★
Northern White and Western Red
Cedar Poles—Plain or Butt-Treated

POLES

B. J. Carney & Co., 100 N. 7th St., Minneapolis, Minn.—Western red cedar poles. Pentrex Butt Treated or Plain.

C. M. Christiansen Co., Phelps, Wis.—Northern White Cedar Poles, plain or butt treated.

International Creosoting and Construction Co., Galveston, Texas.—Creosoted Southern Yellow Pine Poles. Plants Beaumont and Texarkana, Texas.

T. M. Partridge Lumber Co., Minneapolis, Minn.—Northern White—Western Red Cedar Poles. Plain or butt-treated.

ATLANTIC
Creosoting Co., Inc., 17 Battery Pl., N.Y.C.
Creosoted Pine Poles
Crossarms . . Conduit
PLANTS AND OFFICES
New Orleans, La. Jackson, Tenn. Boston, Mass.
Winnfield, La. Louisville, Miss. New York, N. Y.
Norfolk, Va. Savannah, Ga. Philadelphia, Pa.
Annapolis, Md. Chicago, Ill.

UNDERGROUND CONTRACTOR
TILE CONDUIT WORK—MANHOLES
BURIED CABLE TRENCH
SEYMOUR CORLEY
220 N. FRINK PEORIA 5, ILL.

ACCOUNTING
HERDRICH BOGGS and CO.
Certified Public Accountants
803 Electric Building
INDIANAPOLIS 4, IND.

FILMGRAPH PAT'D
Conference Recorders
UNINTERRUPTED
Longtime (up to 12 hours) Conference & Telephone Recordings on Safety Film
Models for Dictation "TALKIES"
ECONOMICAL
PERMANENT
INSTANTANEOUS
PLAY-BACK
MILES REPRODUCER CO., INC. 812 BROADWAY, N.Y.3 Dept. JT

SLOAN, COOK & LOWE
CONSULTING ENGINEERS
120 SOUTH LA SALLE STREET
CHICAGO
Appraisals—Original Cost Studies
Depreciation, Financial, and Other Investigations

MANFRED K. TOEPPEN
Engineer
Consultation • Investigation Reports
261 Broadway, New York 7, N. Y.

INSPECTION SERVICE
For poles, crossarms, and other timber products. Preservative treatments of timber products. Analyses of wood preservatives.
A. W. WILLIAMS INSPECTION COMPANY
Main office and laboratories: Mobile, Ala.
Branch offices:
New York, N. Y., St. Louis, Mo., and Eugene Ore.

J. G. WRAY & CO.
Consultants
Plant—Engineering—Traffic
Fundamental Plans
Equipment Type Studies
Valuations and Analyses
for Rate Adjustments
Original Cost
Continuing Property Records
231 S. La Salle St., Chicago
Tel. State 9556